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DATA ON USSR EXTRACTIVE INDUSTRIES

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DATA ON USSR EXTRACTIVE INDUSTRIES

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I. CHEMICAL INDUSTRY

General

IMPORTANCE OF USSR CHEMICAL INDUSTRY IN ROCKET TECHNOLOGY -- Moscow, Khimicheskaya Promyshlennost', No 7, Oct/Nov 57, pp 5-6

The recent launching of the artificial earth satellite has again confirmed the opportunities for Soviet science and technology, including chemical technology. Indeed, modern rocket technology makes very important demands on a whole series of chemical products and materials required in this field. The Soviet chemical industry is successfully producing all the products and materials required of it for these purposes.

Of particularly great significance in the USSR is the development of the chemical industry from the standpoint of applications in mechanical technology. About half of the total output (in terms of cost) of the Soviet chemical industry is required in the processes of manufacturing and operating machines. The importance of chemical production in this respect is shown most of all in the new branches of chemical industry required in the new field of rocket technology.

NEW EQUIPMENT FOR ZINC OXIDE PRODUCTION -- Riga, Sovetskaya Latviya, 16 Nov 57

At the Chemical Plant imeni Mendeleyev the first experimental rotary furnace in the USSR for producing zinc oxide has been put into operation. The aggregate consists of a lined drum, a 150-meter pipe for condensing the zinc vapors, a catcher, and mechanical filters. In contrast to the ordinary installations, the new aggregate permits the production of zinc oxide by a cheaper and simpler method, namely, the nonmuffle (bezmufel'nyy) method.

Agricultural Chemicals

USSR FERTILIZER PRODUCTION INCREASES FAIL TO SATISFY REQUIREMENTS -- Moscow, Udobreniye i Urozhay, No 11, Nov 57, pp 26-27

At present, the Soviet Union holds first place in the world in reserves of potassium salts and exceeds all other countries in this respect by a significant margin.

During the period 1952-1955, the production of potassium fertilizers in the USSR almost tripled. The Solikamsk, Berezniki, Stebnikov, and Kaluga potassium combines are now producing about 850,000 tons of K_2O a year, but even this quantity does not completely satisfy the requirements of agriculture in the USSR. Based on the norms recommended for various agricultural crops, according to the figures of VIUA (All-Union Institute of Agricultural Technology), the annual needs in potassium fertilizers of USSR agriculture amount to 5 million tons.

"APATIT" COMBINE BEING EXPANDED -- Moscow, Sovetskaya Rossiya, 20 Nov 57

Apatite, a valuable fertilizer raw material for agricultural crops, is extracted on the Kola Peninsula. To increase its production, the "Apatit" Combine is being expanded. To transport the apatites for the extraction area, a large tunnel is currently being constructed in the mountain.

NEW TRACE-ELEMENT FERTILIZERS -- Riga, Sovetskaya Latviya, 16 Nov 57

The Rustavi Nitrogen Fertilizer Plant has mastered the production of a highly effective compounded inorganic trace-element fertilizer. To test the new product, the experimental shop at the plant produced more than 40 tons of it in its pilot plant installation.

In addition to nitrogen, the new fertilizer contains calcium, magnesium, manganese, cobalt, nickel, and other elements necessary for the growth and development of plants.

The new product is superior not only as far as the content of trace elements is concerned, which increases its effectiveness, but also by reason of its reduced cost. As a raw material for its preparation, in addition to nitric acid and ammonia, the untreated manganese ores of the Chiatura deposit are used.

INCREASED AUTOMATION OF USSR FERTILIZER PLANTS -- Kiev, Pravda Ukrainy, 19 Nov 57

The assembly of two large chambers for the continuous production of superphosphate has been completed at the Konstantinovka Chemical Plant. The putting into operation of this modern equipment permits mechanization and automation of production processes at the enterprise. This will permit an output increase of inorganic fertilizer of tens of thousands of tons a year and will improve quality considerably. In 1958, two more of these aggregates will be installed.

As a result of a complete utilization of available equipment, the production of ammonium sulfate at the Yasinovskiy Coke-Chemical Plant will be increased by 10,000 tons a year.

The output of inorganic fertilizer at the Gorlovka Nitrogen Fertilizer Plant will be expanded. Here the construction of a system for the production of granulated ammonium nitrate has been started. Hundreds of thousands of tons of inorganic fertilizer will be supplied to agriculture this year by the use of a production waste, the open-hearth furnace slag of the Azovstal Plant.

In 1958, the enterprises of the Stalinskiy Economic Region will put out more than a million tons of various kinds of inorganic fertilizers for agricultural purposes.

Basic Chemicals

ARGON OFFERED FOR SALE WITHOUT RESTRICTION -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 10 Jul 57

The Balashikhinskiy Oxygen Plant is selling pure argon to all organizations. No prior authorization is required. Address: Balashikha, Moskovskaya Oblast. -- Advertisement

MAGNESIUM COMPOUNDS IN INSULATION PRODUCTION -- Ashkhabad, Turkmenskaya Iskra, 19 Nov 57

The development of many branches of industry requires considerable quantities of high-quality insulating material. The Turkmen SSR is compelled to bring such materials in from other republics. At the same time, the republic has inexhaustible reserves of such raw material which could be used for the production of insulation, namely, magnesium "n'yuvell" and "sovelit."

The mineral waters of Cheleken, Nebit-Dag, and Boya-Dag contain from 2 to 3 kilograms of magnesium per cubic meter. The simplicity of the technology involved will permit the establishment of insulating magnesium here and will satisfy not only the needs of Turkmen industry but also those of other economic regions.

The Cheleken Iodine-Bromine Plant has the required raw material and the electric power base. It would be possible to set up magnesium "sovelit" production here.

NEW CITRIC ACID PLANT -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 20 Nov 57

A citric acid plant has been put into operation in Riga. The raw materials employed by the new plant are the wastes of the sugar industry. During 1958-1959, the production capacity of the enterprise will be brought up to 300-350 tons a year.

Dyestuffs

POOR-QUALITY DYESTUFFS IN USSR -- Moscow, Pravda, 16 Jun 57

Textile workers in the USSR have been complaining for a long time about the poor quality and limited selection of dyes.

[Comment: Full text of this short article on shortcomings in dye production by the Ministry of Chemical Industry appears in Current Digest of the Soviet Press, Vol IX, No 24, 24 July 1957, p 36.]

POSTWAR INCREASE IN USSR DYESTUFF PRODUCTION FACILITIES -- Moscow, Khimicheskaya Promyshlennost', No 7, Oct/Nov 57, p 19

The restoration and development of the organic dyestuffs industry in the USSR after World War II has demanded the introduction of special measures to meet the rapidly rising needs of the country not only in dyestuffs but in other organic chemicals supplied by the dyestuffs industry.

Consequently, the Soviet dyestuffs industry is at present laying out a considerably larger number of plants than before the war. Five of the old war-damaged plants were completely rebuilt, with a considerable expansion in capacity and in variety of manufactured products. During the postwar period, the over-all total of new construction and of restored structures amounted to 65 production units, not counting the large volume of new and restored general plant structures, electric power installations, warehouse facilities, transportation facilities, living quarters, etc.

In 1956, the output of dyestuffs in the USSR amounted to 77,500 tons, that is, 2.3 times the 1940 level. The number of individual types of dyestuffs produced industrially amounted to 430 varieties.

Pharmaceutical Production

VISIT BY EAST GERMAN CHEMICAL SPECIALISTS -- Alma-Ata, Kazakhstanskaya Pravda, 12 Nov 57

The drugs produced by the Chimkent Chemical-Pharmaceutical Plant are famous far beyond the limits of the USSR.

Several days ago, the plant was visited by a group of chemical specialists from East Germany. It included Prof R. Tren, Dr G. Falt, and Engr I. Kessel'ring. These men familiarized themselves with the plant, with the technology of alkaloid production, and with the properties of such compounds as morphine, narcotine, and codeine.

Plastics

USSR POLYETHYLENE PRODUCTION -- Moscow, Na Stroitel'stve Truboprovodov, 24 Nov 57

At present, polyethylene in the USSR is produced by domestic [otechestvennyy] plants of local industry and by the Ministry of Chemical Industry USSR. The Okhta Chemical Combine produces polyethylene tape with a thickness of 0.3 millimeter. This product is used in the petroleum industry to cover pipes as an insulating material.

The properties of the polyethylene, according to data of the Okhta combine and the Scientific Research Institute for the Polymerization of Plastics, are as follows:

Mechanical

Tensile strength	120-160 kg/sq cm
Specific elongation	150-160%
Modulus of elasticity	1,500-2,500 kg/sq cm
Bending strength	120-170 kg/sq cm

Thermal	
Brittleness point	60°
Physical	
Specific weight	0.92-0.93 g/cu cm
Hygroscopicity	0-0.1%
Chemical	
Acid and alkali resistant	
Electrical	
Dielectrical strength	45-60 kw/mm
Volumetric resistance	10^{17} ohms-cm

The production of plastics, in particular polyethylene, is increasing sharply to more than 20 times the former output. Thus, polyethylene may solve the problem concerning nonmetallic pipes. Polyethylene pipe of any thickness may be obtained by continuous extrusion of heated and softened plastic material through a shaping aperture of a screw press. The same technique may be used to produce polyethylene tape. In view of the elasticity of the polyethylene, the pipes may be reeled on special drums.

Glavgas (Main Administration for Gas Industry) USSR and the Ministry of Chemical Industry USSR must set up the production of low-pressure polyethylene. As a result the cost of the product will decrease approximately 90 percent. The cost today -- 70-100 rubles per kilogram -- is high.

Rubber and Rubber Products

USSR 1957 RUBBER PRODUCTS PRODUCTION -- Moscow, Kauchuk i Rezina, No 10, Oct 57, p 10

In 1957, the USSR synthetic rubber, tire, and rubber products industry should produce 88 percent more synthetic rubber, 72 percent more motor vehicle tires, 56 percent more conveyer and drive belting, 44 percent more V-belting, 310 percent more hose, and 29 percent more rubber footwear than in 1950.

EXPANSION OF USSR SYNTHETIC RUBBER INDUSTRY -- Moscow, Khimicheskaya Promyshlennost', No 7, Oct/Nov 57, p 9-11

In the development and growth of the synthetic rubber industry in the USSR the variety of rubber types has been increased considerably. At the beginning of the Third Five-Year Plan, only one type of rubber was manufactured, namely, sodium-butadiene rubber, and so-called SKB. Before World War II, besides SKB, the industrial production of chloroprene rubber was mastered and butadiene latex (DAB) was manufactured; that is, three types of rubber were put out by the Soviet Union. After the war, the situation was sharply altered. The rise in quantitative output was accompanied by a qualitative increase. The production of new types of rubber was organized.

In 1950, besides the types of rubber produced earlier, butadiene-vinylidenechloride latex (DVKhB-70), butadiene-nitrile rubber SKN of three varieties, polyisobutylene, several types of "nairit" (emulsified chloroprene rubber), SKBM, chloroprene latex, and butadiene-styrene rubber SKS-30 were produced on an industrial scale. The production of "cold" butadiene-styrene rubber, butadiene-styrene latexes, butadiene-methylstyrene rubbers with dissimilar content of the second monomer, and frost-resistant butadiene-methylstyrene rubber was mastered. Consumer demands resulted in an expansion of the assortment of chloroprene and other latexes.

The industrial production of butadiene-methylstyrene SK (SKMS-30, etc.) has been mastered only in the USSR. In its technical properties this rubber is not inferior to SKS-30 rubber and in several respects is even superior to it. In this connection, in view of the large reserves of propylene (which is required for the production of isopropyl benzene and, through it, alpha-methylstyrene, for the improvement of copolymer rubbers), the use of alpha-methylstyrene is being substituted for styrene. SKMS-30 rubber is, at present, widely used for the production of motor vehicle tires. Alpha-methylstyrene is used for producing "cold" SKMS-30 rubber, frost-resistant SKMS-10 rubber, and special SKMS-50 rubber.

The USSR industry was organized for the production of oil-filled rubber (SKS-30AM), the technical properties of which considerably surpass those of butadiene-styrene rubber, which does not contain oil. Oil-filled rubbers are easily extruded, calendered, and quickly heat-plasticized. The chief advantage of rubber mixtures of SKS-30AM over butadiene-styrene rubber is a much lower heat-producing factor during repeated deformation and compression, a quality which increases the roadability of motor vehicle tires. The processing of oil-filled rubber in 1956 has resulted in the saving of thousands of tons of ethyl alcohol.

In 1956, the manufacture of silicone rubber (SKT) was significantly increased. This type of rubber retains its properties within a temperature range of minus 60 degrees to plus 250 degrees. It resists the action of water, ozone, ultraviolet rays, acids, alcohols, and oils. SKT is characterized by good dielectric properties -- low dielectric loss at high frequencies, resistance to the corona effect and the action of electrical discharges. The demand for SKT has recently increased considerably, and despite the fact that in 1957 its output has been double that of 1956, the requirements of the national economy in this special type of synthetic rubber will not be completely satisfied. To satisfy these demands, plans will be made for the major industrial production of SKT in 1958 and the industrial production will have to be organized for other heat-resistant rubbers which retain their elasticity above 300 degrees.

Up to a short time ago, Soviet industry produced a comparatively small amount of butyl rubber which was processed at one of the pilot plants. At the end of 1956, the industrial production of butyl rubber was begun, and in 1957, the requirements of the national economy for this rubber, which possesses a high gas impermeability and very good chemical stability, should be satisfied.

In connection with the need for producing tubeless tires there has arisen a need for producing brominated butyl rubber. This rubber retains a high gas impermeability, good chemical stability, and other technical properties of butyl rubber, but in contrast to the latter, has the capacity to combine with other rubbers and to be vulcanized with them. During the second half of 1956, a pilot plant of Glavkauchuk (Main Administration for Rubber Industry) began to produce brominated butyl rubber which is being successfully used for the production of the hermeticized layer of tubeless tires. In the near future, large-scale industrial production of this type of rubber will be organized.

USSR industry has produced, and sent to consumers for testing, consignments of new types of polymers and copolymers of chloroprene, including "nairit-S," a copolymer of chloroprene with 3-5-percent styrene possessing a complex of technical properties of vulcanized rubbers practically the same as "nairit," but differing from it by the low tendency of the crude mixtures of crystallize. This improves its technical properties considerably: a copolymer of chloroprene, which is characterized by the low tendency to crystallize and by increased stability at low temperatures over chloroprene rubber; a copolymer of chloroprene with acrylonitrile, differing from ordinary chloroprene rubber by its high oil- and gasoline-resistance and its high heat-resistance; special chloroprene rubber "nairit-A" (cement, produced from this rubber, possesses a very high adhesive property and can successfully be substituted for cement manufactured from scarce and expensive gutta-percha). In 1958, Soviet industry will put out large consignments of these new types of chloroprene rubbers.

NEW SUBSTITUTE FOR GUTTA-PERCHA -- Moscow, Vechernyaya Moskva, 12 Nov 57

Until recently, a large quantity of gutta-percha produced from the southern plants "beresklet" (Evonymus verrucose) and "evkomiya" (Eucommia ulmoides) was used. A group of scientists at the All-Union Scientific Research Institute for Synthetic Rubber imeni S. V. Lebedev worked for a long time trying to create a cheaper material.

As a result of these experiments, carried out under the direction of Prof A. L. Klebanskiy, they succeeded in working out such a method. The product will replace gutta-percha completely, particularly in glues employed in the footwear industry. The new material costs only one twentieth as much as natural gutta-percha and retains all its basic qualities.

After the tests have been completed, industrial production of the new material will be started.

USSR SYNTHETIC RUBBER EXHIBITED ABROAD -- Moscow, Komsomolskaya Pravda, 15 Nov 57

The Krasnoyarsk Synthetic Rubber Plant sends its product to Moscow, Leningrad, Yaroslavl, and other cities of the Soviet Union, far beyond the borders of Siberia. Krasnoyarsk rubber has been exhibited at the International Trade Fair in Leipzig and at the World's Fair in Milan.

USSR RUBBER PRODUCTS CONSIGNMENT TO INDIA -- Leningradskaya Pravda, 16 Nov 57

Among recent achievements by the Leningrad Industrial Rubber Products Plant was the ahead-of-schedule fulfillment of an order from a metallurgical combine in India.

II. PETROLEUM AND NATURAL GAS INDUSTRY

USSR In General

Miscellaneous

USSR PLANS TO INCREASE OIL OUTPUT -- Ashkhabad, Turkmenskaya Iskra, 19 Nov 57

The USSR is the world's third largest crude oil producer and one of the leaders in explored oil reserves. Within 15 years, it expects to increase its crude oil output to 350-400 million tons a year.

Refinery Construction

LARGEST OIL REFINERY STARTS IN CHERNIKOVSK -- Moscow, Sovetskaya Rossiya, 13 Nov 57

Novo-Aleksandrovka -- An oil refinery equipped with first class equipment has started operations in Chernikovsk.

New technology will ensure a greater withdrawal of light products. The enterprise is also scheduled to produce fatty acids, high aromatic content ether, paraffin, and other products.

When all of its shops and units go into full operation, this refinery will become the largest of its type in the USSR.

Gas Operations

GLAVGAZ SETS UP TECHNICAL COUNCIL WITH SUBSIDIARIES -- Moscow, Stroitel'stvo Predpriyatiy Neftyanoy Promyshlennosti, No 11, Nov 57, pp 28-29

Glavgaz (Main Administration of the Gas Industry) of the Council of Ministers USSR has approved the structure of its Technical Council.

Yu. I. Bokserman, deputy chief of Glavgaz, will be chairman of the council, and A. G. Osipov, chief of the Technical Administration of Glavgaz, will be deputy chairman.

The Technical Council will have seven sections under its jurisdiction: Section on Geology and Development of Gas Deposits; Section on Extraction, Transport, and Storage; Section on Pipeline Construction; Section on Refining of Gas and By-Products; Section on Gasification of Solid Fuels and Underground Coal Gasification; Section on New Equipment, Apparatus, and Construction Machinery; and Section on Economy of Extraction, Production, and Construction in the Gas Industry.

Glavgaz is planning to build a major trunk gas line from Serpukhov to Leningrad with offset lines to Kalinin and Novgorod. The major line and the offsets are scheduled to start operations in the third quarter of 1959.

The planning of the lines has been entrusted to Ukrgiprogaz (Ukraine State Gas Planning Institute), to the general designer, and to Giprospetsneftestroy (State Institute for Planning Special Petroleum Installations). The plans are to be ready by 1 December 1957.

The lines will be built by Mosgazprovodstroy (Moscow Gas Line Construction Trust), the general builder, Svarmontazh (Welding and Assembly Trust), and Soyuzneftestroymekhanizatsiya (All-Union Trust for Mechanized Construction).

Glavgaz has taken over Glavpodzemgaz (Main Administration for Underground Coal Gasification) of the former Ministry of Coal Industry USSR and the following enterprises of Glavpodzemgaz: Moscow and Lisichansk underground coal gasification stations; Yuzhno-Abinsk Underground Experimental Gasification Station; the Shatskaya, Angren, and Kamenskaya underground coal gasification stations now under construction; Plant No 21 in Stalinskaya Oblast; Office of Directional Drilling in Voroshilovgradskaya Oblast; VNIIPodzemgaz (All-Union Research and Development Institute for Underground Coal Gasification) in Moscow; and Gipropodzemgaz (State Planning Institute for Underground Coal Gasification) in Stalino.

In view of the explored gas reserves at the Stepnovo deposit and the expected increase from other deposits in Saratovskaya and Stalingradskaya oblasts, Glavgaz plans to build a line of 820-millimeter pipe from Saratov to Gor'kiy to supply gas to Gor'kiy, Dzerzhinsk, Yaroslavl', and Shcherbakov.

PLANNED PRODUCTION OF GAS FOR 1970-1972 -- Moscow, Na Stroitel'stve Truboprovodov, 29 Nov 57

By 1970 or 1972, the USSR plans to reach an output of 270-320 billion cubic meters of gas a year by extraction of natural gas and production of synthetic gas, or from 13 to 15 times as much as in 1957.

Most of the natural gas is to be extracted in the RSFSR, the Ukraine, Azerbaydzhan, Uzbekistan, and Turkmenistan.

The enormous increase contemplated in extracted requires a rapid solution of several scientific and technical problems, such as automation and telemechanization of the gas fields and pipelines, establishment of more advanced construction methods, elimination of seasonal operations in construction work, and further improvements in the technology of construction, in the methods of exploration, and in underground storage near the large industrial centers.

The large-scale program also poses a serious assignment for geologists and explorers. More than 75 percent of the existing reserves were explored during the past 5-6 years. Not only were high-yielding deposits opened, but new gas-bearing regions were found in the eastern Ukraine, along the Volga River, in northern Krasnodarskiy Kray, and in the Bukhara-Khiva region in Central Asia.

If the contemplated goal is to be met, much more geological searching and deep and extra-deep drilling must be done. Moreover, different methods must be used from those used in petroleum drilling.

During the next few years, heavy duty gas lines are scheduled for construction, among them the line from Kanevskaya to Voroshilovgrad by way of Rostov. This line is scheduled to pass more gas than was extracted and produced in the USSR in 1956. A line from Serpukhov to Leningrad will be put into full operation and major lines are to be put into service from along the Volga River to Gor'kiy, from Bryansk to Leningrad by way of Polotsk, from Shebelinka to the Baltic Sea area by way of Minsk, from Karadag to Tbilisi by way of Akstafa and thereon to Yerevan, from Dzhebel to Perm' by way of Berezniki, and from Bukhara to Tashkent by way of Samarkand.

By increasing pipe diameter from 700 to 1,000 millimeters, the line's capacity will be tripled, although only twice as much metal will be used.

In addition to increasing the extraction of natural gas, much more synthetic gas is to be produced from coal and shale. Not only is more gas to be produced through the processing of coal and shale from shaft and open-pit mining, but underground coal gasification is also to be expanded. The immediate task in this respect is to conduct scientific research to solve the many problems of underground coal gasification and to master one method completely.

This expected increase to 270-320 billion cubic meters a year is of enormous significance to the national economy because it will raise the ratio of gas from 4 percent to 30 percent of the fuel balance, it will reduce the operating expenses in the fuel industry, and it will ensure a sharp increase in labor productivity.

Within the next few years, natural gas will become the important factor in the improvement of the entire fuel and power balance in the European USSR.

THREE GAS LINES NEARING COMPLETION IN STALINGRAD AREA -- Moscow, Pravda, 19 Nov 57

Stalingrad -- Construction is nearing completion on gas lines from Korobki to Kamyshin, Zhirnoye to Kologirovka, and Zhirnoye to Linevo. Preparations are being made to start the construction of a gas line from Korobki to Stalingrad.

CHARACTERISTICS OF NATURAL COMBUSTIBLE GASES OF DNEPR-DONETS BASIN -- Kiev, Dopovidi Akademii Nauk Ukrainskoy SSR, No 4, 1957, pp 383-385

The Dnepr-Donets Basin has become one of the largest gas-bearing regions in the USSR as a result of the discovery of the largest source of natural combustible gas in the USSR at Shebelinka in the eastern Ukraine, of lesser sources at Mikhaylovtsi and near Solokhi, Runivshchina, and Spivakovka, and of the petroleum-gas deposits at Radchenkovo, Sagaydak, and Zachepelivka.

During the past 10 years, the Institute of Geological Sciences performed more than 80 complete analyses of natural combustible gases extracted from the various wells and horizons in the Dnepr-Donets Basin. The detailed studies which were made have indicated that the chemical properties of gases from the different horizons are not the same inasmuch as the content of methane, heavy hydrocarbons, and nitrogen varies.

The gas from Well No 9, in Jurassic formation 869-875 meters deep, at Solokhi contains 85 percent methane. Of this, 0.33 percent is heavy hydrocarbons and 13.5 percent nitrogen and inert gases.

The Radchenkovo and Sagaydak structures contain considerable volumes of natural gas. The gas in these structures is found in the sand and sandstones of formations of the Triassic period. Laboratory analyses of this gas show that it averages 86.2 percent (80.3-94.6 percent) methane and 13 46 percent (4.9-19.7 percent) nitrogen and inert gases. The content of heavy hydrocarbons in the gas averages only 0.166 percent. The

natural gas from Triassic formations at Radchenkovo and Sagaydak hardly differs in composition from the gas from Jurassic formation at Solokhi. The gas from the above formations at these sites is identical in composition to the gas extracted at Dashava in the Carpathian Region, except that the gas from Dashava contains less nitrogen and inert gases. It may be assumed that the gas pools in the Jurassic and Triassic formations at Solokhi, Radchenkovo, and Sagaydak are not connected with oil pools and can be exploited as independent deposits.

Two wells at Radchenkovo and numerous wells at Shebelinka have produced natural gas from formation of the Permian period. Although both are from Permian formation, the gas at Shebelinka differs in composition from the gas at Radchenkovo. The Shebelinka gas contains more hydrocarbons (6 percent) and only an insignificant quantity of nitrogen and inert gases, whereas the Radchenkovo gas contains 92.0-92.6 percent methane, 1.43-4.38 percent heavy hydrocarbons, and 7.4-7.8 percent nitrogen and inert gases.

The composition of natural gas from the Permian and Triassic formations at Radchenkovo is also different. The gas from the Permian formation contains more methane and heavy hydrocarbons and less nitrogen and inert gases than that from the Triassic formation.

Two natural gas wells were brought in from Middle Carbon formation at Sagaydak. This gas contains 76.1-78.85 percent methane and 21.15-23.9 percent nitrogen and inert gases.

Numerous natural gas wells have been brought in from Lower Carbon formation at Radchenkovo and Mikhaylivtsi. Tests have shown that this gas contains 90.9-99.3 percent methane, 0.13-19.4 percent hydrocarbons, and 0.25-8.5 percent nitrogen and inert gases.

The composition of natural gases from the Triassic and Lower Carbon formations at Radchenkovo is as follows (in percent);

	Triassic	Lower Carbon
Methane	86.2	94.6
Heavy hydrocarbons	0.116	8.23
Nitrogen, inert gases	13.46	4.95

The natural gas from Lower Carbon formation at Mikhaylovtsi contains a smaller percentage of heavy hydrocarbons than the natural gas from the same formation at Radchenkovo. The natural gas from this formation at Radchenkovo contains 20 times as much heavy hydrocarbons as the gas at Mikhaylovtsi. The gas from this formation at Mikhaylovtsi contains 91.6-99.7 percent methane, 0.19-0.80 percent heavy hydrocarbons, and 0.30-9.0 percent nitrogen and inert gases.

The gas pools in the Lower Carbon formation at Radchenkovo are connected with the oil pools in this formation, whereas exploration at Mikhaylovtsi has indicated that the gas and oil pools are not connected.

The natural gas from Jurassic formation at Solokhi, Triassic formation at Radchenkovo, and Lower Carbon formation at Mikhaylivtsi contains only an insignificant quantity of heavy hydrocarbons. From this it may be concluded that when the hydrocarbon content in natural gas is less than 2 percent, the gas is not connected with oil pools, but when there is more than 2-3 percent of heavy hydrocarbons, the gas is connected with oil pools.

Another principle established at Radchenkovo was that natural gases which have migrated into the later-period formations have been enriched with nitrogen and contain less methane.

The following conclusions can be reached by comparing the composition of natural gases from the different horizons of the Dnepr-Donets Basin with the composition of gases from other gas-bearing regions of the USSR:

The composition of natural gas from the Jurassic and Triassic formations in the Dnepr-Donets Basin is similar to that of the gas produced at Dashava and Kaluga in the Carpathian Mountain region except that the Dashava and Kaluga gases contain less nitrogen and inert gases. The composition of gas from the Permian formation at Radchenkovo is similar to that of gas produced at Emba, Ukhta, and Yelshanka. The composition of gas from the Middle Carbon formation at Sagaydak is different from that of the gas produced in the western oblasts of the Ukraine. The gases from the Lower Carbon formation at Radchenkovo and the oil and gas deposits of the Maykop fields are similar in composition except that the Radchenkovo gas contains more nitrogen and heavy hydrocarbons. The composition of gas from the Lower Carbon formation at Mikhaylovtsi is similar to that of gas produced at Verkhovskiy, Saushino, and Archeda in Stalingradskaya Oblast.

The natural gas pools in the Jurassic and Triassic formations at Solokhi, Radchenkovo, and Sagaydak and the Lower Carbon formation at Mikhaylovtsi are independent of oil pools and can be exploited as gas deposits. Those in the Permian formation at Radchenkovo, the Middle Carbon formation at Sagaydag, and the Lower Carbon formation at Radchenkovo are closely connected with oil pools and are components of a single oil and gas deposit. For this reason, all the gas from these deposits cannot be extracted unless all the oil is extracted. -- V. Ya. Klimenko, from a report by V. G. Bondarchuk, Academician, Academy of Sciences Ukrainian SSR

Caucasus

KRASNODAR AREA FIFTH LARGEST USSR PRODUCER -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 13 Nov 57

Krasnodarskiy Kray ranks fourth in oil production in the RSFSR and fifth in the USSR. The area produces high-grade crude oil.

In 1957, production will reach the level originally contemplated for 1960. Drillers have turned over nine new sites for commercial development. Large gas-condensate deposits have been uncovered in the northern part.

The mechanical drilling speed now is 2-3 times as fast as before, and the time for building and assembling derricks has been reduced 20-25 percent.

EIGHT KRASNODAR SUGAR REFINERIES TO GET NATURAL GAS IN 1958 -- Moscow, Na Stroitel'stve Truboprovodov, 29 Nov 57

During 1958 and 1959, a major gas line 540 kilometers long will be built to supply natural gas to the enterprises of Krasnodarskiy Kray.

During 1958, 298 kilometers of lines will be laid to supply gas to eight sugar refineries.

The plans, surveys, and drawings of projects scheduled for construction in 1958 are to be ready by 1 February 1958, whereas those for projects to be built in 1959 are to be ready in September 1958.

The Krasnodarskiy Sovnarkhoz is expected to undertake the drilling of developmental gas wells, the build-up of gas deposits, internal gathering of gas within the fields, and construction of lines in the sugar refineries and of gas distribution stations along the major gas line.

Ural-Volga Region

TATARIYA OIL INDUSTRY USES FUNDS TO EXPAND -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 13 Nov 57

More than 50 percent of the capital investments to be made by the Tatarskiy Sovnarkhoz will be spent to expand the petroleum industry.

Petroleum output in the first 9 months of 1957 was 29.5 percent more than in the same period of 1956. It is scheduled to rise another 22.1 percent in 1958. It is estimated that output in 1965 will triple the 1957 level.

Moscow, Trud, 2 Nov 57

Al'met'yevsk -- Tatnefteprovodstroy (Tatar Oil Pipeline Construction Trust) has just finished the construction of a 450-kilometer crude oil line from Al'met'yevsk to Perm'. Al'met'yevsk is the center of the oil industry in the Tatarskaya ASSR. The line is now undergoing tests.

ABOUT 1,000 WELLS TO BE BUILT IN NEXT 3 YEARS AT STALINGRAD AREA FIELD -- Moscow, Sovetskaya Rossiya, 20 Nov 57

Belashov -- Within the next 3 years, about 1,000 oil wells are to be built at the Bakhmet'yevskiy Oil Field, which has become the second largest oil producer among the USSR fields. The field has been in operation only 6 years.

In the past 10 months, it produced nearly 14,000 tons of crude oil above its quota. Until now, it has been producing oil from only three strata but it plans to start development of four more horizons.

Ukraine

DOLINA FIELD ACCOUNTS FOR MOST OF OUTPUT IN STANISLAV AREA -- Kiev, Rabochaya Gazeta, 5 Nov 57

The Stanislavskiy Sovnarkhoz produced 34 percent more oil in 10 months of 1957 than in the same period of 1956. Most of the output came from the Dolina Oil Field.

Central Asia

KIRGIZ 1960 OUTPUT TO INCREASE OVER 1955 -- Frunze, Sovetskaya Kirgiziya, 5 Nov 57

In 1956, the Kirgiz SSR increased its crude oil output to 8.4 times that of 1940.

In 1960, it is scheduled to produce 7.8 times as much crude as in 1955.

III. FERROUS METALLURGY

Production

USSR CASTINGS PRODUCTION IN 1956 -- Moscow, Liteynoye Proizvodstvo, No 11, Nov 57, p 1

The output of castings in the USSR amounted to 3.4 kilograms per inhabitant in 1913 and approximately 35 kilograms in 1940. The 1956 production of 58 kilograms per person was 1.7 times as great as in 1940.

USSR PIPE PRODUCTION FOR VARIOUS YEARS -- Moscow, Stal', No 11, Nov 57, p 997

Since 1900, USSR pipe production has been as follows (1,000 tons):

1900	21.0	1930	233
1905	19.9	1935	639
1910	45.1	1940	966
1913	77.7	1945	571
1919	4.1	1955	3,549
1925	75.3	1956	3,835

Types of steel pipe produced are as follows (percent of total production):

	1940	1945	1950	1955	1956	1957	1960
Seamless	66.2	85.7	72.0	68.2	64.4	61.8	54.4
Welded	33.0	12.7	19.9	18.4	16.2	15.4	14.0
Electrowelded	0.8	1.6	8.1	13.4	19.4	22.8	31.5

KAZAKH SSR STEEL PRODUCTION INCREASE IN 1957 -- Alma-Ata, Bloknot Agitatora, No 17, Sep 57, p 33

In 6 months of 1957, steel production in the Kazakh SSR increased 6 percent and rolled stock production 5 percent over the corresponding period for 1956.

INCREASED STEEL PRODUCTION AT UZBEK PLANT -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 3 Nov 57

Steel production at the Uzbek Metallurgical Plant is 20 times as great as it was in 1940.

KAZAKH PLANT PRODUCES ABOVE PLAN -- Alma-Ata, Kazakhstanskaya Pravda, 17 Nov 57

The Kazakh Metallurgical Plant is the foremost enterprise in Temir Tau. Because of its successes in pre-October competition, the personnel of the plant has been awarded the Red Banner. Since the beginning of 1957, the plant has produced more than 2,500 tons of steel above plan.

Construction

LARGEST CONVERTER SHOP IN USSR TO BE COMPLETED IN 1957 -- Moscow, Metallurg, No 11, Nov 57, p 12

By the end of 1957, construction will be completed on the largest converter shop in the USSR at the Krivoy Rog Metallurgical Plant.

TRANSCAUCASIAN PLANT BLAST FURNACE RECONVERTED -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 10 Jul 57

Work has been completed on blast furnace No 2 of the Transcaucasian Metallurgical Plant to have the furnace operate at a higher gas-top pressure. The furnace had to be partially rebuilt.

ZHDANOV PLANT SHOP TO BE BUILT FOR PRODUCING ORE CRUSHING BALLS -- Moscow, Vodnyy Transport, 23 Nov 57

The Azovstal'stroy Trust, which has put a mechanized blast furnace into operation at the Zhdanov Metallurgical Plant, has now started construction on blast furnace No 5.

A large shop for the production of crushing balls is being constructed at the Zhdanov Plant. These balls will be used by ferrous and nonferrous metallurgical industry concentrating mills and also by the power and cement industries. In 1958, two rolling mills will be put into operation which will produce 84,000 tons of crushing balls a year.

The agglomerating mill and the oxygen station of the plant are being expanded.

In 1958, a large blast furnace, blast furnace No 3, will be built at the Zhdanov Metallurgical Plant imeni Il'ich. Another large spiral pipe welding mill is to be put into operation at the Zhdanov Pipe Rolling Plant imeni Kuybyshev.

BLAST FURNACE 2-bis IN OPERATION AT STALINO PLANT -- Moscow, Rabochaya Gazeta, 5 Nov 57

Blast furnace No 2-bis has been put into operation at the Stalino Metallurgical Plant.

Technology

USE SUBSTITUTE FOR GENERATED GAS IN PETROVSK-ZABAKAL'SKIY OPEN-HEARTH FURNACE -- Moscow, Trud, 13 Nov 57

On the west side of Petrovsk-Zabaykal'skiy are the shops of the metallurgical plant.

In 1957, many measures were taken which improved the technical level of the plant. The open-hearth furnaces were converted to use a coal tar with a high caloric value instead of generated gas. Because of this conversion, the heating regime of furnaces was improved and more speed heats were produced. The gas-generating station for the plant has been shut down. About 200 workers were given jobs in other parts of the plant. By using coal tar, the plant will save about 9 million rubles a year.

USE IRON INSTEAD OF MANGANESE ORE IN STALINO PLANT BLAST FURNACE -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 3 Nov 57

Blast furnace No 3 of the Stalino Metallurgical Plant is the first in the Ukrainian SSR to master output of conversion pig iron without the introduction of manganese ore into the charge. Instead of manganese ore, iron ore and a quantity of limestone are added. Because of an increased ore charge, the productivity of the furnace increased 3 percent. The furnace also uses 40 kilograms less coke. The quality of the metal has improved.

Alloys

HIGH-GRADE STEELS DEVELOPED IN USSR -- Moscow, Stal', No 11, Nov 57, p 1006

In the last 10 years, scientific research and academic institutes and plant laboratories have developed a large quantity of new grades of steels and alloys. About 500 new grades of carbon, low-alloy, structural, tool, stainless and acid-resistant, dynamo and transformer, heat-resistant, and precision steels have been developed. A large number of these steels have already been successfully applied in various industries.

LABORATORY ESTABLISHED AT NOVO-KRAMATORSK PLANT FOR STUDYING HIGH-GRADE STEELS -- Kiev, Pravda Ukrainy, 13 Nov 57

A laboratory has been established at the Novo-Kramatorsk Machine Building Plant for studying the strength of metals at high temperatures. The laboratory has the latest equipment.

The experimental and research establishment of the plant is being expanded and furnished with new equipment. There are more than 20 well-equipped laboratories which carry on investigation to determine the quality of unique castings and forgings and control the quality of metal by ultrasonic and other ways.

BABUSHKIN ELECTRODE PLANT SELLS GRADE B STALINITE -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 10 Jul 57

The electrode plant of Babushkin, Moskovskaya Oblast, is selling 14 tons of grade B stalinite produced according to technical specifications covered by TsMTU 2043-48. The stalinite is sold in 50-kilogram lots.

On request of the buyer, the plant can make shipment by railroad.

Iron Ore, Agglomerate, and Coke Production; Scrap Collection

KRIVOY ROG ORE PRODUCTION -- Moscow, Gornyy Zhurnal, No 11, Nov 57, p 48

In 1955, the Krivoy Rog Basin produced 34.6 million tons of iron ore, and in 1956, 35.5 million tons of ore was produced with an average iron content of 55.5 percent.

FLUXED AGGLOMERATE PRODUCTION INCREASES IN USSR -- Moscow, Metallurg, No 11, Nov 57, p 3

In 1951, the USSR had 26 agglomerating machines with a total area of 1,247 square meters. In 1957, there were 64 machines with a total area of 3,297 square meters. In this period, agglomerate production rose from 12 to 40 million tons a year. The average for agglomerate used in blast furnaces rose from 42 to 66 percent.

Fluxed agglomerate has done much to increase blast furnace production. In 1950, only 1.8 million tons of fluxed agglomerate was produced, and in 1956, production had risen to 35 million tons. This amounted to 87.9 percent of the total agglomerate produced in the USSR.

COKE PRODUCTION INCREASES AT ZAPOROZH'YE PLANT -- Moscow, Trud, 17 Nov 57

Since 1950, the Zaporozh'ye Coke-Chemical Plant has increased production 76 percent. The plant produces more than 30 kinds of products.

Since the beginning of 1957, the coke shop has produced more than 17,000 tons of metallurgical coke above plan.

SCRAP COLLECTION IN URYUPINSK -- Moscow, Sovetskaya Rossiya, 14 Nov 57

Enterprises and institutions in Uryupinsk, Balashovskaya Oblast, have fulfilled the annual plan for the collection of metal scrap.

Deposits and Mines

RESERVES OF USSR IRON ORE DEPOSITS -- Moscow, Gornyy Zhurnal, No 11, Nov 57, pp 23-27

The main iron ore deposits in northwest RSFSR are in the Karelian ASSR and Murmanskaya Oblast, the ores of which have a magnetic composition. These deposits are the Pudozhgorskoye, Mezhozerskoye, and Kostamukinskoye in the Karelian ASSR, with total reserves of 800 million tons of ore, and the Olenegorskoye, Kirovogorskoye, and Yeno-Kovdorskoye in Murmanskaya Oblast, with total reserves of 900 million tons. The investigated ore reserves will ensure production of over 300 million tons of pig iron. The Cherepovets Metallurgical Plant is the consumer for these ores.

The iron ore reserves in the central parts of the RSFSR are very large. The hematite-martite ores (58-61 percent iron) in the Kursk Magnetic Anomaly exceed 10 billion tons. Of these total reserves, 1.4 billion tons has been investigated in the Lebedinskoye, Mikhaylovskoye, Yakovlevskoye, and other deposits.

In addition, about 4 billion tons of ferruginous quartzite has been investigated in the Staro-Oskolets and other areas of the KMA (Kursk Magnetic Anomaly). The complicated hydrogeological conditions and the development of the deposits primarily for underground mining operations will require greater capital investments and will increase mining costs. However, calculations indicate that because of large-scale extraction of rich ore the cost of a ton of ore will not exceed present average prices.

In the last few years, the industrial significance of the KMA as a huge iron ore region for the USSR has greatly increased. Construction has started in this area on two large open-pit mines, the Lebedin and Mikhaylov mines, which have rich ores.

The problem of quick industrial exploitation of the rich ores of the anomaly, which lie at a depth of 450-700 meters in difficult hydrogeological conditions, raises many doubts and arguments. Nevertheless, the economic significance of this iron ore region urgently requires overcoming technical difficulties. The iron ores of the anomaly can and must be used not only in the interests of the construction of communism for the people of the Soviet Union, but also in the interests of socialist industrialization of the People's Democracies.

Besides the deposits of the KMA in the central regions, there are investigated reserves of "hydrogoethite" ore amounting to 100 million tons in the Tul'skoye and Lipetskoye deposits. The small nest-like ore beds of these deposits would produce only low-grade, expensive ores. Therefore, it is questionable whether it would be feasible to mine these ores in the future when mining operations are expanded in the rich ore deposits of the KMA.

The rich ores of the Krivoy Rog Basin and the Kremenchug Magnetic Anomaly in the Ukraine alone will ensure the production of 750 million tons of pig iron. The readily concentrated magnetic ores will be sufficient for the production of about one billion tons of pig iron. The possibility of expanding the extraction of quartzite ores by the open-cut method and the nearness of the coal of the Donets Basin to the metallurgical plants make conditions favorable for developing pig iron smelting and lowering the cost of pig iron. By mastering the use of ore in the Kerch Basin (1.7 billion tons), the iron ore base for the Ukraine will be further consolidated. The republic will be assured of producing possibly up to 2.5 billion tons of pig iron. Thus, its iron ore resources assure the Ukrainian SSR of a leading role in the production of ferrous metals.

The prospects for further development of the Transcaucasian Metallurgical Plant in Rustavi are limited. The plant's raw material base (Dashkesan Magnetic Ore Deposit) in the Georgian SSR is small. Other large iron ore deposits with industrial potential have not yet been found. The Dashkesanskoye Deposit and some newly discovered ore sections can ensure enough ore for the production of not more than 30-35 million tons of pig iron.

In the Northern Urals, the total reserves of relatively small iron ore deposits amount to about 60 million tons of ore. The deposits of magnetic ore of average quality (42 percent iron) consist of three groups: the Bogoslovskoye, the Pokrovskoye, and the Severnoye deposits, two of which are removed from railroad lines. In addition to these deposits, there are small deposits of "hydrogoethite" ores in the Languro-Samskaya group, whose industrial value is insignificant.

Investigations in 1954 and 1955 in the Northern Urals (Zamarayskaya Depression) disclosed about 700 million tons of geological reserves of low-grade bean-conglomerate ore (34.5 percent iron) with a mixed composition (goethite, "hydrogoethite," hydrohematite) and of a sedimentary origin, apparently of the Jurassic era. The ores contain .2 percent nickel and 1.4-1.6 percent chromium. The technology for concentrating these ores has not been studied, and the conditions for working these deposits would be complicated because of the water-soaked overburden. The large reserves of ore make the deposits of the Zamarayskaya Depression of interest for

further investigation and for industrial exploitation, since about 200 million tons of pig iron could be produced from the ores. The cost of preparing ores from the Serovskoye Deposit would be considerably less than the projected costs of agglomerate produced from Kachkanar ores, which are to be supplied to the Serov Metallurgical Plant imeni Serov.

A highly interesting group of deposits are the magnetitic ore deposits with a contact-metasomatic origin near Salekharda (Yun'-Yaginskoye Deposit and others). The geological reserves of ore of this group can now be estimated at about 300 million tons. Iron ores near the coking coal of the Pechora Basin is a highly positive economic factor which will influence industrial expansion in the northern and subpolar regions of the Urals in the future.

In the Central Urals, the iron ore resources consist of the magnetitic ore deposits (43 percent iron) in the Tagilo-Kushvinsk area, and the ilmenite-magnetitic vanadium-bearing (Kachkanarskoye, Pervoural'skoye, and Visimskoye deposits whose ores have an average iron content of 17 percent) and "hydrogoethite " ores of the Alapayevsk area, with 50 million tons.

The investigated iron ore reserves of the Central Urals ensure production of about 750 million tons of pig iron. However, the predominance of low-grade ores limits pig iron production, since it will take 9 tons of ore to produce one ton of pig iron, which naturally will increase the cost of producing pig iron and will require increased capital investment for mine construction.

In the Southern Urals, the iron ore deposits are limited. The magnetitic ores of the Magnitogorskoye and other deposits can produce enough material for the production of 150 million tons of pig iron, and the "hydrogoethite" and siderite ores of Bakal only 80 million tons of pig iron. The Komarovo-Zigazinskaya group of "hydrogoethite" ore deposits are of local importance and their reserves are limited. They have enough ore for the production of 12 million tons of pig iron. The ilmenite-magnetitic ores of the Kusinskoye and Kopanskoye deposits will permit production of only 35 million tons of pig iron, and the low-grade, "hydrogoethite" ores of the Orsk-Khalilovskoye Deposit, containing nickel, 50 million tons of pig iron. Consequently, neither the Magnitogorsk Metallurgical Combine nor the Chelyabinsk Metallurgical Plant are assured of a local supply of iron ore.

Because of the quality of ore and coal which is supplied to Ural ferrous metallurgical plants from Kuznetsk and Karaganda, pig iron is produced considerably more cheaply in the Urals than in the Ukrainian SSR. Therefore, the development of ferrous metal production in the Urals is favorable. However, without the magnetitic ores of the Kustanayskaya group in the Kazakh SSR the Urals ferrous metallurgical industry cannot expand immediately.

Because there is no local coking coal base and the resources of steam coal on the eastern slopes of the Urals are limited, the area has an unfavorable economic factor. Therefore, the problem of supplying the metallurgical industry in the Northern and Central Urals with Pechora coal by railroad in the shortest time possible is of national economic importance and awaits a decision.

The decision to develop a third coal and metallurgical base in the eastern parts of the USSR is economically sound. Operations at the Kuznetsk Metallurgical Combine indicate that the magnetitic ores of local deposits, which are average and small in size and which raise the cost of the ore, will make it possible to produce pig iron at a lower cost than that produced in the Ukrainian SSR, even though the ore has also to be prepared. Nevertheless, the local raw material base of magnetitic ore has not yet been sufficiently explored. The base can ensure the production of only 135 million tons of pig iron and can supply only the Kuznetsk Metallurgical Combine.

Geological exploratory operations in the last few years in Siberia have disclosed a number of magnetitic ore deposits (Anzasskoye, Ampalykskoye, and other deposits). The prospective reserves of ore in these deposits are sufficient to supply the Zapadno-Sibirskiy Metallurgical Plant, which is to be built in Stalinsk.

The exploration of the magnetitic iron ore deposits in Gornaya Shoriya and in the south of Krasnoyarskiy Kray is intolerably slow. The economic premises for using these deposits as a raw material base for a second West Siberia plant are considerably more significant than using the low-grade ores of the Nizhne-Angarskoye Deposit, the urgent detailed exploration of which proved to be premature and detrimental to finding and exploring magnetitic deposits adjacent to Stalinsk. The Nizhne-Angaro ores require complicated concentration, and the iron concentrate produced from the ores contains only 47 percent iron and up to 20 percent silica. Pig iron produced from these ores will cost considerably more than pig iron now produced at the Kuznetsk Combine.

The newly discovered ferruginous ores 250 kilometers from Tomsk do not change the situation. The low-grade Kolpashevo ores (36 percent iron content) with a mixed mineral composition can be satisfactorily concentrated only by complicated methods. A possible method of exploiting this deposit is by underground mining under difficult hydrogeological conditions. In this way, the magnetitic deposits can be used for producing a cheaper and better-quality ore. The searching parties in the Kolpashevo region may possibly discover ore sections more favorable for exploitation and ore of higher quality. At present, the Kolpashevo iron ore basin is of secondary importance, despite its large iron ore reserves which amount to more than 30 billion tons.

The explored reserves of ore of the Korshunovskoye and Rudnogorskoye deposits in Siberia can ensure production of only 170 million tons of pig iron. The Berezovskoye Deposit with hydrogoethite and siderite ores, which can supply enough ore for the production of 100 million tons of pig iron, is removed from the main railway network. It is doubtful whether it can be exploited in the near future. Therefore, it is more feasible to press exploration in the prospective Angaro-Ilimsk iron ore region, so that the three projected East Siberia ferrous metallurgical plants will be opportunely ensured of local ores.

Certainly, the Aldan group of magnetitic ore deposits in Yakutskaya ASSR is of interest. Nearby coal deposits, which have coal suitable for coking, are being explored.

The Far East, as yet, has limited known reserves of iron ores. The possible pig iron production from these magnetitic and readily concentrated ores is estimated at about 100 million tons. The Garinskoye Deposit is quite removed from a railroad line, but the Kimkanskoye Deposit (magnetitic ferruginous quartzite ores) ores could be used at Komsomol'sk-na-Amur. This situation and the problem of supplying the ferrous metallurgical industry in the Far East delay a beginning to industrial exploitation of the explored deposits.

The reserves of iron ore investigated at present in the Kazakh SSR will ensure the production of almost 2 billion tons of pig iron. About 40 percent of these reserves will require concentration by complicated means. Only 10 percent of the ores will require no concentration. These ores are in the Atasu region of Karagandinskaya Oblast. These deposits can supply ore for the production of 3.5 million tons of pig iron a year. There is promise of considerable reserves of ore at the Atansorskoye Deposit in Severo-Kazakhstanskaya Oblast. However, geological exploratory work in this area is dragging.

The ores of the Kustanay group of deposits, the Sokolovskoye, Sarbayskoye, Kacharskoye, and other deposits are readily concentrated. Possible pig iron production from the investigated ores is estimated at 700 million tons. These deposits are looked upon as a supplementary source for the Magnitogorsk Combine.

More than 20 million tons of pig iron a year can be produced from the ores of the Lisakovskoye and Ayatskoye deposits. The large-scale extraction of ore by open-pit mining (more than 40 million tons a year) at a low cost (3-5 rubles per ton of ore will compensate to a considerable degree for increased costs to prepare the ores for smelting.

Average Chemical Composition of Iron Ores and Iron Content in Concentrates Produced

	Fe	FeO	SiO_2	Al_2O_3	CaO+ +MgO	S	P	TiO_2	V_2O_5	% of Concentrate	% of Iron Extracted	Deposit
Ores not requiring beneficiation												
Martite-Hematite	59.0	--	8.0	3.0	8.0	0.04	0.05	--	--	--	--	Krivoy Rog, KMA
Hydro-goethite	45.0	--	17.0	2.0	2.0	0.05	0.25	--	--	--	--	Bakal, Lipetsk
Siderite	31.0	--	10.0	1.5	11.0	0.3	0.03	--	--	--	--	Bakal
Readily beneficiated ores												
Ferruginous quartzite												
Initial ore	34.0	9.0 (min)	34.0	4.0	3.0	0.4	0.4	--	--	--	--	Krivoy Rog, KMA, Kimkansk
Concentrate	60.0	--	9.0	1.0	1.5	0.05	0.13	--	--	51.0	85.0	

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	Fe	FeO	SiO_2	Al_2O_3	CaO+ +MgO	S	P	TiO_2	V_2O_5	% of Concentrate	% of Iron Extracted	Deposit
Hydro-goethite												
Initial ore	42.0	--	23.0	3.0	3.0	0.1	0.16	--	--	--	--	Berezovsk
Concentrate	55.0	--	16.0	3.0	3.0	0.1	0.18	--	--	72.0	94.0	
Magnetitic												
Initial ore	20.0	5.0 (min)	37.0	7.0	26.0	0.1	0.01	--	--	--	--	Kachkanar
Concentrate	54.0	--	9.0	4.0	8.0	0.1	0.01	3.0	0.45	23.0	70.0	
Initial ore	46.0	12.0 (min)	22.0	6.0	18.0	2.5	0.3	--	--	--	--	
Concentrate	58.0	--	7.0	3.0	6.0	0.7	0.05	--	--	62.0	90.0	Ural, West Siberia
Initial ore	41.0	12.0 (min)	13.0	4.0	17.0	0.05	0.5	--	--	--	--	Angaro-Ilimsk
Concentrate	61.0	--	4.0	3.0	4.0	0.05	0.25	--	--	60.0	90.0	

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	Fe	FeO	SiO_2	Al_2O_3	CaO + MgO	S	P	TiO_2	V_2O_5	% of Concentrate	% of Iron Extracted	Deposit
Ores difficult to beneficiate												
Hematitic												
Initial ore	40.0	--	30.0	10.0	0.8	0.01	0.1	--	--	--	--	
Concentrate	49.0	--	20.0	8.0	1.0	0.02	0.1	--	--	58.0	73.0	Nizhne-Angaro
Chamotte-hydrogoethite												
Initial ore	38.0	--	16.0	12.0	2.0	0.4	0.3	--	--	--	--	
Concentrate	51.0	--	10.0	12.0	2.0	0.2	0.4	--	--	58.0	73.0	Ayat
Initial ore	33.0	--	36.0	5.0	2.0	0.05	0.9	--	--	--	--	
Concentrate	59.0	--	10.0	6.0	2.0	0.05	0.7	--	--	52.0	92.0	Lisakovsk

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Investigated Reserves of Ore

	Total Reserves (billion tons)	% of Iron Content	Not Requiring Beneficiation		Readily Beneficiated		Difficult to Beneficiate	
			(billion tons)	(% of iron)	(billion tons)	(% of iron	(billion tons)	(% of iron)
Northwest	1.7	31	--	--	1.7	31	--	--
Central	7.3	42	1.5	58	4.2	35	1.6	38
South	10.9	40	1.9	58	5.5	36	3.5	36
Urals	5.7	23	0.4	45	5.0	20	0.3	34
West Siberia and Krasnoyarskiy Kray	1.6	40	0.1	51	0.5	40	1.0	38
East Siberia and Far East	1.6	39	0.3	39	1.3	39	--	--
Kazakh SSR	7.1	39	0.8	52	1.5	43	4.8	39
Total	35.9	37	5.0	55	19.6	31	11.3	36
Percent of total reserves	100	--	13.9	--	54.6	--	31.5	--
Percent of deposits being exploited	5.5	40	2.0	55	3.5	38	--	--

IRON ORE BASE FOR ZAPADNO-SIBIRSKIY PLANT -- Moscow, Geografiya v Shkole, No 6, Nov/Dec 57, p 62

The Zapadno-Sibirskiy Metallurgical Plant is being built 17 kilometers from Stalinsk. The plant will have the largest blast furnaces in the world, and it will have a production capacity second only to that of the Magnitogorsk Metallurgical Combine.

Of particular importance for the plant is the development of an ore base. Since geological work was just being started on the deposits, the Kuznetsk Metallurgical Combine was built on the basis of ore deposits in the Urals. From 1930 to 1933, a number of ore deposits, the Shalymskoye, Sheregeshskoye, Tashtagol'skoye, Teyskoye, and others, were discovered. The iron ore reserves in Gornaya Shoriya and Khakassiya, estimated at 447 million tons in 1933, exceeded those of Magnitnaya Mountain. In 1930, construction was started on the first mine, the Temir Tau Mine. But since then, only five average and small mines have been built. Ore is still delivered from the Urals to the Kuzbass in considerable amounts.

The laying of railroads and branch lines to the deposits in West Siberia contributed to the success in working the deposits. The Stalinsk-Abakan Line, which is being built to connect the Kuznetsk and Zapadno-Sibirskiy enterprises with the Khakassiya deposits, is of great importance.

ORE RESERVES IN KUSTANAYASKAYA OBLAST -- Minsk, Sovetskaya Belorussiya, 14 Nov 57

According to the former chief engineer of Glavruda (Main Administration of the Ore Industry), the total geological reserves of iron ore in the Kustanay Basin amount to more than 10 billion tons. The reserves in the basin are five times as great as those in the Krivoy Rog Basin.

In 1958, construction will be started on a complex of enterprises north of the settlement of Lisakovsk. These enterprises will have double the capacity of the Sokolovsk-Sarbay Ore Concentrating Combine. A town, which is to be built in this area, still has not been given a name.

Most of the deposits in the Kustanay Basin contain magnetitic ores with iron contents of 45 to 60 percent. The Lisakovsk phosphoritic ores have an iron content of 36 to 38 percent, which is similar to the Lorraine ores. The Kustanay Metallurgical Plant is being planned on this base of raw material. The plant will use the Thomas process of steel production. Besides producing steel, the plant will also produce large quantities of phosphoritic soil conditioners.

CONSTRUCTION UNDER WAY AT MIKHAYLOVKA -- Moscow, Vodnyy Transport, 23 Nov 57

Hundreds of workers and specialists from the Donbass, Urals, Siberia, and Kazakhstan have come to Mikhaylovka in the Kursk Magnetic Anomaly to work. The Kurskrudstroy Trust has been established. The trust has begun construction on industrial and communal buildings. Work has also started on stripping the overburden from sections of the ore deposits.

USSR TO PRODUCE 250-300 MILLION TONS OF IRON ORE ANNUALLY -- Kiev, Pravda Ukrainy, 15 Nov 57

It was indicated at the jubilee session of the Supreme Soviet USSR that iron ore extraction in the Soviet Union in the next 15 years will increase to 250-300 million tons annually.

The Krivoy Rog mines will have to increase ore extraction from 40 million tons a year to 90 million tons.

The Krivoy Rog Geological and Exploration Trust has discovered five large ferruginous quartzite deposits. Exploratory work has now started on the so-called Annovskoye Deposit, whose industrial reserves are estimated at one billion tons of magnetitic ore. An ore-concentrating combine with an annual output of 5 million tons of concentrates will be built on the basis of this deposit. Planning of two more combines has been started.

In all, the basin will have seven combines in the near future. These combines will produce 40 million tons of concentrates a year.

MEASURES TAKEN TO IMPROVE PRODUCTION AT BAKAL MINE ADMINISTRATION -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 17 Nov 57

The acting chief engineer of the Chelyabinskiy Sovnarkhoz Metallurgical Industry Administration, after examining the operations of the Bakal Mine Administration, has instructed the management to increase the shipment of ore and improve its quality.

Particular attention was given to strengthening production and technological discipline, observing weekly and daily production schedules, eliminating accidents, and improving the quality of equipment repairs. The managements of the administration and of the Yuzhuralmetallurgstroy Trust were made responsible for having the most important construction projects at the mine in operation on schedule.

The chief mechanic and the chief of Capital Construction Administration of the sovnarkhoz were charged with ensuring that the Bakal Mine Administration has the necessary equipment and spare parts. The director of the Magnitogorsk Mining Equipment Plant was instructed to have 40 dump cars for transporting ore at the mine built by the end of 1957.

PIT IN OPERATION AT IMENI LUKSEMBURG MINE -- Moscow, Rabochaya Gazeta, 5 Nov 57

The Dnepropetrovskaya-Komsomol'skaya Pit No 1 of the Mine imeni Rosa Luksemburg has been put into operation. The pit will have an annual iron ore output of 200,000 tons.

KARADZHAL IRON ORE MINE BEING BUILT -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 3 Jul 57

The Karadzhal Mine is being built for the extraction of iron ore. The first shaft of the mine will be driven to a depth of 600 meters. The planned annual output for the shaft is 2.2 million tons. Work on the shaft has been complicated by underground water.

The foundation has been laid for the ore-crushing mill. The mill will process 1.2 million tons of ore annually. Two production lines for crushing iron and manganese ores simultaneously have been provided for.

A water system for the mine is being built; the water of the Atasu River will be used. A water reservoir covering 10 square kilometers is to be built by 1958.

SKIPS AT SAGSAGAN' PIT START OPERATING -- Kiev, Rabochaya Gazeta, 6 Nov 57

The skips of the Saksagan' Iron Ore Pit, which will produce 3.5 million tons of ore annually, have started operating. This pit is second in output to the Gigant Pit, the largest iron ore pit in the USSR.

The skips carry a load of 25 tons and travel at a speed of one kilometer per minute. Loads are carried from a depth of 1,100-1,200 meters.

Miscellaneous

LABOR PRODUCTIVITY INCREASES IN FERROUS METALLURGICAL INDUSTRY -- Moscow, Stal', No 11, Nov 57, p 1011

In 1956, labor productivity in the USSR ferrous metallurgical industry was 98.7 percent greater than in 1940. The greatest increase was made during the period 1946-1950, when productivity per worker increased 72.7 percent.

In the Fifth Five-Year Plan period, labor productivity in the industry increased 46.7 percent. Production increased 79.4 percent and the number of workers 22.3 percent.

In 1956, pig iron production per blast-furnace worker was 2.3 times as great as in 1940. This increase was connected with the considerable increase in the average volume of blast furnaces.

In 1956, labor productivity in open-hearth production was more than twice as great as in 1940.

In 1956, labor productivity in rolling mill shops increased only 67.9 percent over 1940. This is explained by the increased output of more complicated shapes, and also by the production of quality steel, which required an increase in the number of workers for cleaning the metal.

LABOR PRODUCTIVITY IN IRON ORE INDUSTRY -- Moscow, Gornyy Zhurnal, No 11, Nov 57, p 3

Labor productivity in the iron ore industry was 199 tons per worker in 1913, 283.9 tons in 1928, 353.4 tons in 1932, and 904.6 tons in 1937.

TYPES OF PRODUCTION AT MOGILEV PLANT -- Minsk, Sovetskaya Belorussiya, 14 Nov 57

The Mogilev Metallurgical Plant produces not only water and sewage pipe, but also roofing and sheet steel. Besides supplying the Belorussian SSR with pipe, the plant also sends products to the Lithuanian, Latvian, and Estonian SSRs, the Karelian ASSR, and the Leningrad and Murmansk economic regions.

The plant has been expanding its assortment of products. Sheet steel is now sent to the Minsk tractor and motor vehicle plants.

STAL'PROYEKT INSTITUTE NEEDS ENGINEERS AND TECHNICIANS -- Moscow, Vechernyaya Moskva, 18 Nov 57

Stal'proyekt Institute needs engineers and technicians who are specialists in computing machines, pulse technique, and automation, for permanent work.

IV. NONFERROUS METALLURGY

Production

REFINED COPPER PRODUCTION IN KAZAKH SSR INCREASES IN FIRST HALF 1957 -- Alma Ata, Bloknot Agitatora, No 17, Sep 57, p 33

In 6 months of 1957, refined copper production in the Kazakh SSR increased 36 percent, zinc production 16 percent, and nonferrous metal rolled stock production 12 percent over the corresponding period of 1956.

KIRGIZ SSR ENTERPRISES INCREASE NONFERROUS PRODUCTION -- Frunze, Sovetskaya Kirgiziya, 5 Nov 57

In 1956, enterprises of the nonferrous metallurgical industry of the Kirgiz SSR produced 13 times as much products as in 1940. The Kirgiz SSR is the foremost producer in the Soviet Union of mercury and antimony.

TYRNY-AUZ PLANT PRODUCES ONE THIRD OF ALL USSR TUNGSTEN AND MOLYBDENUM -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 5 Jul 57

The Tyrny-Auz Tungsten and Molybdenum Combine produces about one third of the tungsten and molybdenum produced in the Soviet Union.

The combine is being expanded, and in 1960, the combine must produce 2.5 times as much products as in 1955.

Moscow, Gornyy Zhurnal, No 11, Nov 57, p 32

Sixty-one percent of the tungsten in the USSR is extracted from skarn-like tungsten-molybdenum ores and 37 percent from quartzite vein ores.

LEAD PRODUCTION INCREASED ONE THIRD SINCE 1950 AT CHIMKENT PLANT -- Alma Ata, Kazakhstanskaya Pravda, 17 Nov 57

Since 1950, the Chimkent Lead Plant has increased metal production by one third. A technology for producing the highest grades of lead, which are used in atomic reactors, has been mastered.

In 1957, the plant has produced 13 million rubles' worth of products above plan.

FAR NORTH GOLD PRODUCTION PLAN FULFILLED -- Leningradskaya Pravda, 16 Oct 57

Miners in the Far North have successfully fulfilled the annual plan for the extraction of gold, and they have also fulfilled the plan for surveying gold-bearing areas which will be worked next year.

In 1958, workers in the Far North must increase gold extraction considerably. They will put 30 new placers into operation.

1957 TADZHIK SSR TUNGSTEN ORE PRODUCTION INCREASED OVER 1956 -- Stalinabad, Kommunist Tadzhikistana, 1 Nov 57

In 1957, enterprises in the Tadzhik SSR have increased tungsten ore production 13 percent over 1956, zinc concentrate production 51 percent, ozocerite production 38 percent, and antimony concentrate production 24 percent.

64 PERCENT OF NICKEL PRODUCED FROM SULFIDE ORES -- Moscow, Gornyy Zhurnal, No 11, Nov 57, p 31

Sixty-four percent of all nickel produced in the USSR is produced from sulfide ores. Seventy-seven percent of all the nickel ore reserves in the USSR consist of sulfide ores.

Construction

CONSTRUCTION STARTED ON SECOND SECTION OF SUMGAIT ALUMINUM PLANT -- Baku, Bakinskiy Rabochiy, 2 Nov 57

Construction has begun on the second section of the Sumgait Aluminum Plant. The personnel of the Zakpromstroy Trust of the Aluminstroy Construction Administration have started building the third building which will house dozens of electrolytic baths.

The plans call for the plant to be completed in 1959, and in 1960, the plant will be operating at full capacity. All aluminum production processes will be mechanized and automatized.

The Sumgait Aluminum Plant is the foremost nonferrous metallurgical plant in the Azerbaydzhan SSR. The personnel of the plant have been working well, and each month the plan is exceeded and production of metal increased. The projected output of the first section of the plant has been exceeded by one third.

Technology

HIGH-INTENSITY CYCLONE FURNACE DEVELOPED FOR SMELTING COPPER ORE -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 17 Nov 57

The Institute of Power Engineering of the Academy of Sciences Kazakh SSR has developed a new high-intensity cyclone furnace for smelting fine ore and concentrates.

Air is blown into a cylindrical smelting furnace tangential to a cylinder which rotates at more than 100 meters per second. A swirling vortex is formed in the furnace. The fine ore fed into the furnace is caught in the vortex and thrown against the wall where it sticks to a molten film of melted material; while being blown over, the fine ore is quickly heated and melted.

The molten material flows along the wall to a special chamber under the furnace where it settles and separates. Out of this chamber come finished material and slag.

The new method has been used for processing heats of copper, copper-zinc, and polymetallic concentrates and of zinc production tailings.

The productivity of the smelting area of a cyclone furnace is 10 times as great as smelting in a shaft furnace, 15 times as great as smelting in the suspended state, and 30 times as great as smelting in a reverberatory furnace.

In the cyclone furnace method of smelting, the powder-like material is better trapped on the wall which is covered with a molten film of melted matter. Because of this, the losses of valuable metals in the smoke greatly decreases.

The first semi-industrial cyclone unit with a productivity of 100 tons per day has been built at the Balkhash Copper-Smelting Plant.

TECHNOLOGY IMPROVED FOR ALUMINUM PRODUCTION -- Vil'nyus, Sovetskaya Litva, 17 Nov 57

In 1932, the first electrolytic baths in the Soviet Union required 23,000 amperes and produced 150 kilograms of aluminum per day. Present electrolytic baths are calculated to require 130,000 amperes and produce 940 kilograms of aluminum a day.

ELECTROSMELTING OF POLYMETALLIC ORE INTERMEDIATE PRODUCTS -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 10 Jul 57

The Scientific Research Institute for Nonferrous Metallurgy (Gintsvetmet) has been working on electrosmelting of intermediate products for more than 10 years. Positive laboratory results have been obtained by the institute in separating several elements from polymetallic ore intermediate products produced by concentrating mills in the Kazakh SSR. Not having completed its investigative work, particularly on producing metallic lead and zinc from these products or on developing a technology for reprocessing intermediate products, the institute in 1952 achieved a postponement for further experimental work at the Irtysh Polymetallic Combine Plant, where an experimental shop costing about 8 million rubles was built in 1954. Electrosmelting of intermediate products under industrial conditions was begun at this plant.

A section composed of nine men under the guidance of Candidate of Technical Sciences M. Lakernik of the institute is conducting the experimental work. Five members of the section are experimenting in Moscow. However, Lakernik and his assistant make many monthly trips to the plant. They pick up the data and return to Moscow to continue their experiments.

Plant personnel receive no information on experiment results. Furthermore, there are few results. There is still no effective method of reprocessing intermediate products.

Personnel of the Irtysh Plant propose establishing an experimental group and a central laboratory to transfer all experimental work from the institute to the plant.

The experimental shop and the permanent experimental group should be under a single management. The plant's experimental shop is of importance on a republic level. The shop is now mastering a method for reprocessing an intermediate product for the production of copper matte, rough lead, and metallic zinc. In the future, the shop will have to concern itself with the extraction of cadmium from tailings and conduct experiments in processing titanium-nickel ores.

TYPES OF MATERIALS TO BE USED IN ALUMINUM PRODUCTION -- Moscow, Tsvetnyye Metally, No 11, Nov 57

The rapid development of the aluminum industry, which is called for by the Sixth Five-Year Plan, will be continued in the future. The development of the industry will require larger aluminum ore reserves. Besides using low-silicieous bauxites for the production of alumina, nephelites

and alunits will be more extensively used. In various parts of the USSR it may become advantageous to produce alumina also from clays and the ash of coal having a similar composition. To successfully process this aluminum raw material, acid methods can be used, particularly the sulfuric acid method which deserves the most attention.

Deposits, Mines, Concentrating Plants

USSR RESERVES OF COPPER-BEARING ORES IN 1938 AND 1957 -- Moscow, Gornyy Zhurnal, No 11, Nov 57, pp 31-33

Reserves of various copper-bearing ores in the USSR and the extraction of copper from those ores for 1938 and 1957 are as follows (in percent):

Type of Ore	Reserves		Copper Extraction	
	1938	1957	1938	1957
Copper-bearing sands	20.2	26	6.1	25.8
Copper sulfides	14.5	26	82.7	36.9
Copper-molybdenum	52.2	21	--	20.2
Copper ores in silicate contact gangue	1.5	4	2.3	1.1
Others	11.6	23	8.9	16.0

Reserves of lead ores and the extraction of lead from those ores for 1938 and 1957 are as follows (in percent):

Type of Ore	Reserves		Lead Extraction	
	1938	1957	1938	1957
Lead-zinc sulfide ores	62.5	40	25.0	44.0
Lead-zinc ores in carbonates	22.2	33	49.0	21.0
Lead-zinc ores in silicate gangue	6.8	15	12.5	18.0
Others	8.5	12	13.5	17.0

Reserves of zinc ores and the extraction of zinc from those ores for 1938 and 1957 are as follows (in percent):

Type of Ore	Reserves		Zinc Extraction	
	1938	1957	1938	1957
Lead-zinc sulfide ores	78.8	77	63.0	65.0
Lead-zinc ores in carbonates	8.9	11	--	16.0
Lead-zinc ores in silicate contact gangue	4.7	8	15.7	12.0
Others	7.6	4	21.3	7.0

Reserves of molybdenum ores and the extraction of molybdenum from those ores for 1 January 1957 are as follows (in percent):

Type of Ore	Reserves	Molybdenum Extraction
Copper-molybdenum	42.2	25.7
Impregnated molybdenum ores in igneous rock	26.0	24.2
Molybdenum in silicate contact gangue together with scheelite	17.5	26.3
Molybdenum in quartzite veins	10.3	23.8

1957 BAUXITE RESERVES 287 PERCENT OF THOSE IN 1929 -- Moscow, Gornyy Zhurnal, No 11, Nov 57, pp 32-33

The known bauxite reserves in the USSR in 1957 are 287 percent of those in 1929.

RESERVES OF USSR MANGANESE ORE DEPOSITS -- Moscow, Razvedka i Okrana Nedr, No 11, Nov 57, pp 17-19

The Nikolayevskoye Deposit of manganese ores in the Ukrainian SSR has an area of 500 square kilometers. A strip bearing no ore divides the deposit into the eastern and western sections. At present, the deposit has been almost totally investigated. Its reserves are estimated to exceed one billion tons.

The Bol'shoye Tokmakskoye Deposit in the Ukrainian SSR was discovered in the last few years. The ores in the deposit are almost exclusively carbonate types. The deposit extends for 90 kilometers and varies in width from 2 to 7 kilometers. The ore reserves are estimated to be 800 million to one billion tons.

Although the Chiatura Deposit has been exploited for many years, the reserves of this deposit as of 1 January 1956 are estimated to be about 185 million tons.

The Ural deposits of manganese ore consist of many varied types. The Northern Urals manganese basin has a meridinal extension for 150 kilometers. At present, the investigated reserves in the Northern Urals are about 50 million tons.

DECIDE ON METHOD OF ORE EXTRACTION AT NIKOLAYEVSKOYE DEPOSIT -- Alma Ata, Kazakhstanskaya Pravda, 1 Nov 57

The Vostochno-Kazakhstanskiy Sovnarkhoz and Gosplan Kazakh SSR held a conference to determine the best method to work the Nikolayevskoye Deposit, either by the underground or by the open-pit method. The open-pit method requires a large capital outlay. Most of the participants believed that the open-cut method of mining should be used at the deposit. With this method of mining there will be no danger of underground fires.

COPPER ORE FOUND IN FOOTHILLS OF CAUCASUS RANGE -- Moscow, Na Stroitel'stve Truboprovodov, 22 Nov 57

An expedition of the Severo-Kavkazkiy Geological Administration has found several copper ore-bearing zones in the foothills of the Caucasus Range. These ores have a high copper content.

The work of determining the reserves of ore has been completed.

CHIRAGIDZOR MINE ADMINISTRATION FULFILLS PLAN -- Baku, Bakinskiy Rabochiy, 13 Nov 57

The Chiragidzor Mine Administration has fulfilled its 11-month plan for the production of pyrites.

LOAD TURNOVER AT BAZHENOV ASBESTOS MINES -- Moscow, Gornyy Zhurnal, No 11 Nov 57, p 42

At present, load turnovers of 35-40 million tons a year at existing and planned open-pit mines are usual. The load turnover at the Bazhenov Asbestos Mines is 35-40 million tons per year. In the following 5-year-plan period, it will be brought up to 90-95 million tons a year.

URTITE WITH HIGH NEPHELITE CONTENT FOUND IN KEMEROVSKAYA OBLAST -- Frunze, Sovetskaya Kirgiziya, 1 Nov 57

At the source of the Kiya Shaltyr River in Tisul'skiy Rayon, Kemerovskaya Oblast, rich deposits of urtite with a high nephelite content have been found. The Kiya-Shaltyrskoye Deposit of urtite will be a great addition in the raw material base for the aluminum industry in the Kemerovo area, according to A. M. Chusanov, chief of the geological section of the Kemerovskiy Sovnarkhoz.

TECHNOLOGICAL IMPROVEMENTS AT KADZHARAN COMBINE INCREASE PRODUCTION -- Yerevan, Kommunist, 16 Nov 57

Because of technological improvements at the concentrating mill of the Kadzharan Copper and Molybdenum Combine, the mill fulfilled its 1957 plan for the production of copper concentrate on 20 October and for molybdenum concentrate on 4 November. Since the beginning of 1957, more than 8.2 million rubles' worth of products have been produced above plan. Labor productivity improved 16.7 percent. The cost of products decreased 12.3 percent.

At present, the concentrating mill has the highest extraction of molybdenum of all the concentrating mills in the USSR. The quality of concentrates has improved. In 1957, the copper content in copper concentrates was increased 18 percent. The production of higher grades of molybdenum concentrate was also increased.

DIAMOND DEPOSITS IN URALS AND YAKUTSKAYA ASSR -- Moscow, Gornyy Zhurnal, No 11, 1957, pp 33, 40

Searching and investigating operations for diamond deposits in the USSR were regularly organized between 1928 and 1938. In 1938, diamond placers were discovered in the Urals.

The development of these Ural deposits began in 1941 by underground methods of mining. Despite the small reserve of diamonds in the deposits, but because of the presence of terrace and valley placers and the favorable correlation of rock to sand volume, it was feasible to work the deposits by open-cut methods. At present, underground mining for extracting diamonds in the Urals is not done.

The initial diamond mining enterprises were not very productive because of insufficient mechanization. The situation changed greatly after the war when open pits were mechanized and concentrating plants were operated throughout the year.

In 1949, the Ministry of Geology and Conservation of Mineral Resources discovered a new diamond-bearing area in the Yakutskaya ASSR, where, after 5 years, dozens of placers richer than those in the Urals were found.

The first diamonds were found by G. Kh. Faynshteyn in the Yakutskaya ASSR. In 1954, the first root diamond deposit, the Zarnitsa, was discovered in the USSR.

The main diamond reserves in the Yakutskaya ASSR are concentrated in root deposits. The geological nature of these deposits and the diamond content will make it possible to build large diamond mining enterprises which will operate for a long while.

The methods of concentrating ores have been worked out by various research institutes, and the methods have been checked over a long period. Research continues, and according to preliminary data, it can be counted on to improve ore concentration for a greater yield of diamonds and to lower the costs of ore processing. The presence of large reserves of brown coals and natural gas in the Vilyuiy and Markha river basins will ensure fuel to the diamond mining enterprises. The upper zones of the root deposits are made up of small-grained residual rock, which will make mining, and particularly the processing of ore, easy in the initial stages of exploitation.

The second most important source of diamonds in the Yakutskaya ASSR are the valley, terrace, and stream placers of the small rivers, whose basins hold the root deposits. These placer deposits are rich in diamonds. Large capital investment is not needed to exploit them. Exploitation of these sources depends on the seasons.

Other types of diamond-bearing deposits have lesser value, and obviously, they will be worked much later.

The diamond reserves that have been found will not only ensure the USSR with its own requirements for industrial diamonds, but will also permit industry to greatly increase its use of diamonds.

Leningrad, Kostyer, No 11, Nov 57, p 44

At present, several dozen diamond pipes have been discovered on the Central Siberian Plateau. The tops of the pipes were for a long time erroded by rain, riverlets, and wind. Thus placers were formed around the pipes. Then part of the placers were washed away by rivers, and the water carried the diamonds far away. These placers will be worked by washing the sand and gravel.

Geologists consider the diamond deposits in the northwestern part of the Yakutskaya ASSR to be richer than those in Africa. There will be enough diamonds not only for the Soviet Union, but also for all the People's Democracies.

Miscellaneous

NONFERROUS METALLURGICAL INDUSTRY ADVANCE IN UZBEK SSR -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 3 Nov 57

The nonferrous metallurgical industry in the Uzbek SSR is advancing. The Chirchik Hard Alloys Plant, the Altyn-Topkan Copper and Molybdenum Combine, and the Almalyk Lead and Zinc Combine are already producing.

UST'-KAMENOGORSK COMBINE PRODUCES 14 KINDS OF PRODUCTS -- Alma Ata, Kazakhstanskaya Pravda, 16 Nov 57

In 1957, the Ust'-Kamenogorsk Lead and Zinc Combine produced 14 kinds of products which included zinc, lead, cadmium, thallium, and sulfuric acid.

DIAMOND TOWN MIRNYY UNDER CONSTRUCTION -- Moscow, Sovetskaya Rossiya, 2 Nov 57

Today, it would be difficult to recognize Botuobuyya. Airplanes fly over this diamond country one after the other, helicopters hover about, hundreds of motor vehicles travel to the diamond settlement. Mirnyy is now being built.

GOLD NUGGET FOUND AT CHELYABINSKAYA OBLAST PLACER -- Baku, Bakinskiy Rabochiy, 13 Nov 57

A gold nugget has been found at the Lenin Placer in Chelyabinskaya Oblast weighing 2 kilograms 995 grams.

GEOLOGICAL MAP DRAWN OF SOUTHWEST ALTAY REGION -- Alma Ata, Kazakhstanskaya Pravda, 13 Nov 57

Geologists in East Kazakhstan have produced a geological map for the southwest area of the Altay region. Data include information on Vostochno-Kazakhstanskaya and Semipalatinskaya oblasts and on Altayskiy Kray. The map shows the distribution of ores and discoveries of useful minerals.

KAZAKH TRUST LIQUIDATED -- Alma Ata, Kazakhstanskaya Pravda, 1 Nov 57

The Kazakh Geological and Prospecting Trust is being liquidated.

POSITIONS ANNOUNCED IN VARIOUS INSTITUTES -- Moscow, Vechernyaya Moskva, 12 Nov 57

The Institute of Geology of Ore Deposits, Petrography, Mineralogy, and Geochemistry of the Academy of Sciences USSR announces periodic competition for positions of chief of section in physical and chemical experimentation, chief of section on the geology of nonmetallic minerals, chief of research laboratories on high temperature and normal pressures, and laboratories on hydrothermal and hypogenous experiments.

Tashkent, Pravda Vostoka, 12 Nov 57

The Central Asia Scientific Research Institute of Geology and Mineral Raw Materials announces positions for senior and junior scientific assistants and senior engineers as heads of sections and laboratories in the following fields: regional geology, paleontology and stratigraphy, metallic and nonmetallic minerals, mineralogy, petrography geophysics, beneficiation, techniques and methods of geological investigative operations, analytical chemistry, and physics (spectrographs and vacuums).

Moscow, Vechernyaya Moskva, 12 Nov 57

The Geological Institute of the Academy of Sciences USSR announces competitive positions for senior assistants and doctors or candidates of geological and mineralogical sciences specializing in stratigraphy and biostratigraphy (four positions) and in stratigraphy and paleoflora (two positions).

V. COAL INDUSTRY

General

LABOR PRODUCTIVITY AND CONSUMPTION IN USSR MINES -- Moscow, Shakhtnoye Stroitel'stvo, No 9, Sep 57, pp 1-3

Labor consumption in the stopes and in preparatory work in the mines of the basic coal basins of the USSR roughly approximates that of the western European nations, but is five to eight times that of the mines in Illinois, the best in the US. Labor consumption in underground transport is 2.2 times that of the US. The highest labor costs in the USSR are to be found in the underground processes and in surface mine work.

Productivity per shift in coal extraction in the USSR averaged 1.43 tons in 1955. In the US, the per-shift productivity in the extraction of bituminous and brown coal (according to comparable methods of accounting) was 8.8 tons in 1954, while in the UK it was 1.46 tons, West Germany 1.57 tons, and France 1.92 tons.

The open-pit method is the most effective form of coal extraction. Capital expenditures average 120 rubles per ton of planned annual output in this method and 230 rubles by the underground method. Labor productivity in open-pit extraction averages 230-300 tons a month, in comparison with 60-70 tons in underground work; the cost per ton is 29 rubles, as compared with 86 rubles in underground work.

The average monthly labor productivity of workers in coal output in the former Ministry of Coal Industry was 68.3 tons according to 1951-1952 plans and 63.2 tons according to 1954-1955 plans.

Relative capital investments per ton of annual production for 1951-1952 and 1954-1955 averaged 232.6 rubles and 258.8 rubles, respectively, in the Donbass, 208.8 and 280.8 rubles in the Mosbass, 253.1 and 303.0 rubles in the Kizel Basin, and 178.2 and 191.7 rubles in the Kuzbass.

The rise in estimated cost of mines in recent years has resulted from several geological and hydrogeological conditions in the new deposits, installation of more modern mine supports and equipment, the necessity for regulation of mine economy, modernization of coal extraction and processing methods, and improved housing, cultural, and social conditions for the workers.

To boost the technical levels of production and the effectiveness of capital investments in the construction of USSR coal industry enterprises, it is necessary to conduct a rigorous analysis of the causes for lagging technical levels and basic economic indexes of the work of the enterprises, to develop and carry out concrete measures ensuring the future creation of coal mines and pits and concentration plants with accounting methods better than the best in the world today.

There should be radical improvement in coal extraction and concentration techniques, so that the USSR coal industry may occupy a leading place in the world in terms of qualitative indicators and particularly in labor productivity.

In line with determining concrete tasks for technical progress, it is necessary to work out, during the next 10-15 years, plans for development of the USSR coal industry and for introduction of new techniques in production as well as in the construction of coal industry enterprises. Further work on the creation of mines, pits, and concentration plants of a new design is also necessary.

Mine productivity for deposits with sufficient coal reserves and favorable mining conditions must range from 900 to 6,000 tons a year in the Donets, Kuznetsk, and Karaganda Basins and from 300 to 900 in the Mosbass.

Plans include broad development of hydraulic extraction and transport of coal, complex automation and mechanization of underground and surface basic and auxiliary extraction processes, development of highly productive machines and mechanisms adequate for the mining conditions of the particular deposit, broad application of rational work methods as well as construction and equipment of various types, and the bunkerless loading of coal.

Donets Basin

FULFILL 10-MONTH PLAN GOALS -- Kiev, Rabochaya Gazeta, 1 Nov 57

The miners of the Ukraine have fulfilled their 10-month plan goals for output. The enterprises of the Voroshilovgradskiy Sovnarkhoz are 400,000 tons over the plan goals. The coal and fuel combine of the Kievskiy Sovnarkhoz and the Novovolynskugol' Trust of the L'vovskiy Sovnarkhoz did satisfactory work.

NEW CONCENTRATION PLANT -- Kiev, Pravda Ukrainy, 12 Nov 57

The Yasinovstroy Trust has turned over for operation a coal concentration plant at the Yasinovka Coke-Chemical Plant. The new plant, one of the largest in the USSR, can process 800 tons of run-of-the-mine coal daily. It can process the output of about 12 Donbass mines of average capacity in one shift. More than 600 machines and mechanisms, controlled from a main panel, are housed in a 14-story building.

BEGIN MINING OPERATIONS -- Kiev, Pravda Ukrainy, 11 Nov 57

Mines Voroshilovgradskaya No 1 and 2, Khmel'nitskaya, Khersonskaya, Moldavskaya, L'vovskaya, and Odesskaya have begun mining operations. [Comment: These mines, as well as others constructed with Komsomol aid, are sometimes reported with "Komsomol'skaya" following the name.]

Kiev, Pravda Ukrainy, 12 Nov 57

Mine Belorechenskaya has been turned over to the Leninugol' Trust for operations.

Kiev, Rabochaya Gazeta, 5 Nov 57

Mine Butovka-Glubokaya has begun mining operations in Makeyevka. The mine, built by the Makeyevshakhtostroy Trust, is the first of a number of large mines in the area. It will have an advanced mining school and is expected to have a capacity of 1,000 to 1,500 tons a day.

Kiev, Pravda Ukrainy, 7 Nov 57

Mines Zhitomirskaya-Komsomol'skaya, Ravenskaya-Komsomol'skaya, and Poltavskaya-Komsomol'skaya No 1 have begun operations ahead of schedule.

Moscow, Komsomol'skaya Pravda, 11 Nov 57

Mine Cherkasskaya-Severnaya No 2 has begun operations. The mine is the largest of those built in Voroshilovgradskaya Oblast in 1957. A city-type settlement for miners has been built, including an intermediate school, dispensary, hospital, stores, dining hall, kindergarten, and nursery. Eleven Komsomol mines have been built by rapid methods in Voroshilovgradskaya Oblast.

Moscow, Komsomol'skaya Pravda, 14 Nov 57

Mine Khar'kovskaya-Komsomol'skaya No 2 has begun mining operations.

Kiev, Pravda Ukrainy, 12 Nov 57

Mines Krymskaya-Komsomol'skaya and Vinnitskaya-Komsomol'skaya No 1 have been turned over for mining operations.

Kiev, Rabochaya Gazeta, 1 Nov 57

Mine Velikomostovskaya No 2, the largest in the Ukraine, will go into operation at the end of 1957. At present, 15 mines are under construction in the republic.

Kiev, Rabochaya Gazeta, 5 Nov 57

The planned capacity of Mine L'vovskaya-Komsomol'skaya, now under construction, is 500 tons a day.

Kiev, Pravda Ukrainy, 1 Nov 57

Mine Ternovskaya No 1, now under construction, will have a capacity of almost one million tons a year. The mine is located in Dnepropetrovskaya Oblast, near Pavlograd.

L'vov-Volyn Basin

MINING AND GEOLOGICAL CONDITIONS -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 13 Nov 57

The L'vov-Volyn basin consists of four deposits extending from south to north along the South Bug River, from Velikiye Mosty in L'vovskaya Oblast to Ustilug, a rayon center of Volynskaya Oblast. Fields for 42 mines with an annual production capacity of 20 million tons have been surveyed. Detailed surveying work is being done in the Tyaglov sector, where three seams with a thickness of 0.5 to 1.2 meters have been revealed, and it is expected that there will be eight to ten mine fields organized in the area. Recent data also confirm the existence of coal deposits in the northwestern area of Volynskaya Oblast.

The number of workable seams in the various sections varies from one to six, their thickness varies from 0.5 to 2 meters, and the space between seams varies from 6 to 60 meters. The roofs are of shale of average to somewhat weak stability, particularly toward the upper seams, which lie horizontally in folds. The coal lies at a depth of 350 to 600 meters.

Mine construction in this basin was provided for at the end of the first postwar 5-year plan. The first mine in Volyn began operation in June 1954. One or two new enterprises have gone into production every year since that time.

The plans for coal mines were carried out solely on the results of surveying and without previous test data. Therefore, not all the geological particulars of the basin were learned in time. This had a negative effect on the rate of organizing new mines and a resultant series of new difficulties have arisen.

Plans provide for roof control in the faces by partial filling, whereas it would be more practical to control through complete caving. In the search for correct solutions much energy and time was expended, as it was necessary to determine the rate of caving as well as the rate of strengthening in connection with the various types of wall rock for each seam and sometimes for each face.

The percentage of rock removal has been lowered in the plans. Consequently, in a number of mines the productivity of auxiliary hoists has proved to be inadequate. Inadequate knowledge of geological conditions could also explain the strengthening of the main hauling and ventilation workings by reinforced concrete walls with metal upper portions.

There are many unsolved problems. In 1958, the conversion from the continuous mining system to the long wall system must be completed. The Donbass 1 combine is not sufficiently productive under the conditions prevailing in the L'vov Basin. It is the duty of workers of the Donets Scientific Research Coal Institute and Ukrgiproshakht (Ukrainian State Planning Institute for Mine Development) to create a combine which will decrease coal losses, increase stope loading to 35 or 45 percent, and increase labor productivity in the stope faces. A more rational means of extracting coal in 0.5- to 0.7-meter seams with unstable roofs is also necessary.

These and other problems of mastering the new basin compel appeals for aid to the scientific centers of the coal industry, which are 1,500 kilometers away from Volyn. The existence in L'vov of affiliates of the institutes located in the Donbass would be expedient to the interests of production.

The shortcomings of the local basin repair base for mining and mine-building equipment are disturbing to almost all miners. The L'vovskiy Sovnarkhoz, together with its dependent organizations, has planned and implemented a number of measures permitting better utilization of the small Novovolynsk repair and production base. A permanent support shop and an electric shop will be built at the base.

The base will be rapidly converted into a mine equipment repair plant. However, since the plant will be able to repair only about 70 percent of the equipment, it will be necessary to depend on the aid of Donbass shops. Seven new mines, none with repair bases, will begin operations in the next 2 years. It thus appears necessary to construct a second repair plant, perhaps at Sokal'. Such a plant is being designed, but not with much urgency, by Ukrgiproshakht.

Kiev, Rabochaya Gazeta, 1 Nov 57

Mines are under construction in three of the five deposits of the L'vov-Volyn Basin, Volynsk, Mezhrechensk, Sokal'sk, Zabugsk, and Tyaglovsk. Surveying work is nearing completion on the Zabygsk and Tyaglovsk deposits.

In the Dneprovsk brown coal basin, which lies on the right bank of the Dnepr, the seams are not very deep and their average thickness is 3-5 meters, the maximum being 26 meters. Extraction here is by the open-pit method. By the end of the Sixth Five-Year Plan, the open-pit output of coal in the basin will be double the present output.

[Comment: Promyshlenno-Ekonomicheskaya Gazeta, 13 November 1957 (see above), states that the L'vov-Volyn Basin consists of four deposits rather than five.]

FULFILLS PLAN GOALS -- Kiev, Rabochaya Gazeta, 6 Nov 57

The Vatutinugol' Trust has fulfilled its 10-month plan goals of 100,000 tons of brown coal and 30,000 tons of briquettes.

Kiev, Rabochaya Gazeta, 2 Nov 57

Mine Volynskaya No 7 has an annual planned capacity of 300,000 tons, or 1,000 tons a day.

Georgian SSR

QUALITY OF TRANSCAUCASUS COAL -- Moscow, Koks, No 10, Oct 57, pp 3-6

The Transcauscasus Metallurgical Plant was designed entirely on the basis of the local supply of coal for coking, which must include 50-60 percent of the coal from the Tkvarcheli deposit.

In actuality, however, this supply includes not more than 20-25 percent of the Tkvarcheli coal. Instead of Tkvarcheli coal imported Donbass coal is used. It has a sulfur content of almost 3 percent, as contrasted with the 0.95- to 1.03-percent sulfur content of Tkvarcheli coal. Thus, the prospecting of additional reserves of Tkvarcheli coal is an extremely important task.

According to data of the Tkvarchelugol' Trust, the ash content of coal treated by washing during the first half of 1956 was as follows, according to mine: No 1, 42.5 percent; No 2, 42.6 percent; No 3, 45.4 percent; No 4, 46.2 percent; No 5, 46.7 percent; and No 6, 46.5 percent. However, such ash content is not characteristic of Tkvarcheli coal. The ash-content norms for these mines have been established as follows: No 1, 40 percent; No 2, 39 percent; No 3, 35 percent; No 4, 44 percent; No 5, 42 percent, and No 6, 44 percent. From data of the Gruzuglerazvedka (Georgia Coal Surveying) Trust and quality indexes of strata tests conducted in 1957 by the Department of Technical Control, with the cooperation of the Zakinkoksugol' Inspectorate, it follows that the increased ash content of coal is explained mainly by the inclusion in the strata tests and in commercial products of untreated coal with an ash content exceeding 50 percent, carbon argillaceous shale existing in various locales of the coal fields, and rocks from the region of geological disturbance with an ash content of 60-70 percent.

The cost of Donbass and Transcauscasus coal is shown in the table below:

Coal	Current Wholesale Price (rubles)	Moisture Content of Coal (%) Estimated	Actual	Estimated Norm of Coal Ash Content (%)	Railroad Freight Fares (rubles)	Delivery Distance (km)
Donets Concentrate (Zh and K)	154.15	4.3	10.2	7.8	37.65	1,420
Tkvarcheli Concentrate	236.20	8.0	8.9	12.0	13.35	405
Tkibuli Concentrate	180.00	8.0	14.6	12.5	11.10	290

Karaganda Basin

METAL SUPPORTS WIDELY USED -- Frunze, Sovetskaya Kirgiziya, 1 Nov 57

Metal supports are being widely used in the Karaganda Basin. The DRKU-3V supports are used in 2.1- to 2.7-meter-thick seams and the SPK-49 in seams 0.88 to 2.25 meters thick. Eighty faces have metal supports in Karaganda.

COMBINE ACHIEVES HIGH PRODUCTIVITY -- Frunze, Sovetskaya Kirgiziya, 31 Oct 57

The Donbass 1, 2, 4M, and 6 combines are used in Karaganda mines. A combine operator at Mine No 31 in Karaganda, using a Donbass 1 in the Shestifutovyy seam, extracted 30,524 tons of coal in a month.

The Donbass 1 is used in three mines of the Kirgizugol' Trust.

Pechora Basin

HOUSING FOR MINERS -- Moscow, Pravda, 26 Oct 57

The families of 100 miners are moving into new apartments in the Vorkuta area. New streets are being laid in Yuzhnyy, Zapolyarnyy, Komsomol'skiy, Oktyabr'skiy, and other miner settlements. Model dormitory boarding schools are going into use at all mines for young coal miners who have arrived in the Pechora Basin following discharge into the reserves from the army and navy. In 1957, 15,000 soldiers and seamen joined the forces of the miners.

The builders of the Vorkutaugol' Combine have already fulfilled the 1957 plan for housing construction under the financial sponsorship of the combine. A total of 95,000 square meters of housing area has been put to use.

Central Siberia

CONSTRUCTION PLANS FOR AZEY DEPOSIT -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 4 Oct 57

The use of the open-pit method of coal extraction continues to increase in the Cheremkhovo coal basin. At present, 60 percent of the total basin output is mined in this manner.

Preparatory work has begun for the construction of the Safronovskiy open pit, which is to have a capacity of 10,000 tons a day.

The Irkutskiy Sovnarkhoz has planned for the construction of another large open pit in 1958. The pit is to be located on the Azey brown coal deposit.

VI. OTHER SOLID FUELS

Peat Production

EXCEED PLAN GOALS -- Minsk, Sovetskaya Belorussiya, 2 Nov 57

The peat industry enterprises of the Belorussian Sovnarkhoz have fulfilled their yearly plan goals ahead of schedule, exceeding the plan by 100,000 tons.

TO EXPLOIT DOKUDOV RESERVES -- Minsk, Sovetskaya Belorussiya, 2 Nov 57

The Dokudovskoye Peat Enterprise, newly formed for exploitation of the Dokudov peat reserves near Lidy in Belorussia, must begin operations in 1958. The peat reserves in the area amount to at least 200 million cubic meters of high-calorie, low-sulfur-content peat, excellent for plants and factories, electric power stations, and homes. The enterprise will be the largest in the Belorussian SSR, with an annual capacity of 500,000 tons of milled and lump peat. Its consumers will be enterprises in Grodno, Lidy, Volkovysk, Baranovichi, and Minsk.

A total of 142 housing and cultural-social structures will be built in a nearby workers settlement. The buildings will include apartment houses, a club, a dining room, stores for industrial products, an intermediate school, a kindergarten, and a nursery. The roads will be asphalt-surfaced and heat, water, and sanitation lines will be underground.

DATA ON PEAT INDUSTRY -- Moscow, Mekhanizatsiya Trudoemkykh i Tyazhelykh Rabot, No 11, Nov 57, pp 24-27

The USSR peat industry has increased output in the postwar period chiefly through broad introduction of the more mechanized and progressive milled peat method and partially through the excavator method.

The following table shows USSR peat production by republic (in 1,000 tons):

	1913	1940	1945	1950	1955	1957 (Plan)
RSFSR	--	24,989.4	19,179.6	27,207.1	35,893.9	37,727.0
Ukrainian SSR	--	3,065.9	1,473.4	2,741.6	3,877.4	4,127.0
Belorussian SSR	--	3,280.8	1,209.9	3,838.0	7,085.6	8,179.0
Lithuanian SSR	--	102.1	82.2	504.7	1,574.7	1,806.0
Latvian SSR	--	212.9	145.2	622.2	1,265.5	1,685.5
Estonian SSR	--	282.9	157.0	467.6	501.7	518.0
USSR total	1,688	32,078.8	22,361.7	35,444.0	50,233.4	54.079.5
[Actual totals are:		31.934.0	22,247.3	35.381.2	50,288.8	54.042.5]

[Comment: In general, the above figures do not agree with those listed on page 165 of Industriya SSR, Statisticheskiy Sbornik (USSR Industry, a Statistical Compilation), published in 1957. In that publication, for example, the figure given for total USSR peat production in 1940 is 1,151,000 tons greater than the figure in the above table. There are also differences in other totals.]

In hydraulic peat enterprises supplying peat to electric power stations, the percentage of mechanization of labor-consuming operations is as follows:

Operation	1940	1957
Mounting of rollers in flooded fields	--	100.0
Mounting of tubes for hydraulic peat extraction	--	79.8
Formation of bricks from peat mass	60.5	100.0
Laying of bricks in curved forms for drying	--	60.6
Spaced laying of peat bricks (second drying operation)	--	20.8

Operation	1940	1957
Gathering of peat into packing units	3.14	77.0
Loading of peat in fields into narrow-gauge railroad cars	29.7	100.0

The introduction of new machines and mechanisms and advanced technology has resulted in significant changes in the various methods of peat extraction, as is shown in the following table.

	Proportion of Total Output (%)						
Method	1917	1922	1932	1940	1950	1955	1957
Elevator	89.0	83.2	32.9	30.2	21.2	6.3	5.3
Cutting	11.0	14.5	21.4	18.6	12.1	5.3	3.9
Hydraulic	--	2.3	18.3	28.9	27.0	12.2	12.5
Hydraulic-elevator	--	--	1.7	2.8	1.1	0.1	0.1
Dredge and excavator	--	--	0.3	2.9	17.2	26.3	27.1
Milling	--	--	25.4	16.6	21.4	45.8	51.7

The milling and excavator methods have almost eliminated the use of the other methods. The milling method has been occupying first place. Those peat enterprises where the extraction of milled peat has been mechanized in a complex have almost no seasonal workers, one third as many temporary railroad lines, and one half the peat losses from wetting, resulting in a 5-8-percent improvement in the quality of marketed peat.

A large number of various peat extracting and auxiliary machines has been added to the available supply. There are now 1,700 machines for gathering milled peat, 2,600 for gathering lump peat, 290 PK loading cranes, more than 500 special excavators, 430 steam locomotives, more than 10,000 peat-transporting cars, and almost 6,000 tractors operating in peat enterprises which supply electric power stations. The introduction of new techniques made it possible for these enterprises to increase total output 50 percent and considerably decrease its cost during the Fifth Five-Year Plan; previously, labor costs were 80 percent higher and 70 percent more seasonal workers were recruited.

Plans provide for further development of the milled peat method, complex mechanization of bog preparation work, improvement of existing methods and devising of new schemes and means for draining the peat mass, introduction of the gasification of milled peat, electrification of railroad transport in peat enterprises, development of peat briquetting production, etc.

More than half the present peat output is being utilized in the form of power-generating fuel. In a number of power systems which service entire oblasts, such as Kalininskaya, Yaroslavskaya, Ivanovskaya, Kirovskaya, and Bryanskaya, all the electric power stations operate on peat fuel exclusively. Most electric power stations of the Belorussian SSR and Lithuanian SSR operate on peat, as do many large machine building, metallurgical, textile, light, and food industries, to obtain steam, electrical power, and artificial gas. Peat is also utilized for household needs, as a fertilizer for fields, and as bedding for cattle. The peat tars obtained during gasification yield creolin, oil, wax, paraffin, phenol, and other chemical products. Construction materials and semicoke, which is used in the cementation of steel, are also obtained. The peat yields furfural and ethyl alcohol by thermomechanical means of dehydration. The sovnarkhozes will further increase the output of peat for use as a local fuel, and will more widely introduce advanced techniques and technologies to make peat a competitive fuel in each economic administrative region.

RSFSR PEAT RESOURCES -- Moscow, Torfyanaya Promyshlennost', No 6, 1957, pp 30-31

The peat resource areas of the European RSFSR may be divided into four zones. The first, Zone A, includes the northermost regions, Nenets National Okrug, and Murmanskaya Oblast, and has less than 10 percent of the peat resources. Zone B, a broader zone including the Komi ASSR, Arkhangel'skaya Oblast, and the Karel'skiy ASSR, has 10-30 percent of the peat resources area. In Zone C, which includes the more southern areas such as the northern regions of Molotovskaya and Pskovskaya oblasts and all of Vologodskaya, Leningradskaya, Novgorodskaya, and Pskovskaya oblasts, the resources amount to 60-90 percent of the total. In Zone D, which contains all of the remaining area of the European RSFSR, less than 10 percent of the peat area is still unexplored.

The peat deposits which are sufficiently well surveyed appear on large-scale topographical maps; those which are not yet surveyed are shown on 1:100,000-scale topographical maps.

The following table lists peat resources according to administrative units within which work has been done to determine the amounts. Figures are given according to information supplied by Glavtorffond (Main Administration of Peat Resources) for the remaining oblasts and autonomous republics in which the peat resources are well known.

The peat resources of the European RSFSR which are industrially exploitable amount to approximately 15.9 million hectares, and industrially unexploitable peat resources amount to 21.2 million hectares.

In the European RSFSR, according to Glavtorffond figures, there were 35,500 peat deposits in 1956 with an industrial area of 7,340,000 hectares, or 46 percent of the total.

The figures given below are considered to be more accurate than those previously quoted in published material.

Administrative Units	Up to 50 ha: No of Deposits	Up to 50 ha: Total Area (1,000 ha)	50-500 ha: No of Deposits	50-500 ha: Total Area (1,000 ha)	500-5,000 ha: No of Deposits	500-5,000 ha: Total Area (1,000 ha)
Komi ASSR	33,212	340	8,022	863	711	844
Arkhangel'skaya Oblast (excluding Nenetskiy Okrug)	25,640	240	8,519	964	1,286	1,540
Nenetskiy National Okrug	4,870	43	1,851	162	179	164
Murmanskaya Oblast	4,705	51	2,304	220	205	203
Karel'skaya ASSR	18,486	175	5,372	695	664	815
Molotovskaya Oblast	827	14	529	80	124	181
Kirovskaya Oblast	1,309	16	461	71	113	142
Vologodskaya Oblast	2,120	50	2,034	294	335	458
Novgorodskaya Oblast	1,197	25	1,126	159	166	225
Leningradskaya Oblast	4,345	74	1,592	219	248	317
Pskovskaya Oblast	925	19	721	111	102	116
Remaining territory of European RSFSR	20,208	189	4,471	563	884	976
Total	120,544 [Actual total is 117,844]	1,236	37,002	4,402	5,077	5,981

[adjoins page 65 here]

Over 5,000 ha		Total			
No of Deposits	Total Area (1,000 ha)	No of Deposits	Total Area (1,000 ha)	Average depth (m)	Total (billion cu m)
39	444	42,044	2,491	2.03	50.6
115	1,116	35,560	3,861	2.55	98.4
6	33	6,906	404	1.31	5.3
4	25	9,918	499	1.09	5.4
43	410	24,565	2,095	2.02	42.3
21	309	1,501	585	2.51	14.7
10	94	1,893	323	2.16	7.0
45	729	4,534	1,532	2.64	40.4
20	241	2,509	650	2.69	17.5
19	244	6,204	854	2.63	22.5
12	127	1,760	373	2.63	9.81
46	495	25,609	2,222	2.37	52.6
380	4,267	163,003	15,886	2.31	366.5
					[Actual total is 360.2]

[adjoins page 64 here]

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Shale Production

ESTONIAN SSR SHALE INDUSTRY -- Tallin, Sovetskaya Estonia, 25 Aug 57

In Estonia, during the years of Soviet power, five new mines and one open pit have been built, and the Kukruze, Kyava-2, and Kokhtla mines, which have been in operation many years, have been completely reconstructed. Over 12 million more tons of shale were extracted during the Fifth Five-Year Plan by the Estonslanets Trust than were extracted during the previous 5-year plan. Mine Kyava-2 is now extracting almost 1,000 tons more shale per day than in 1956.

There are more than 1,500 homes and more than 80 streets in Kokhtla-Yarve at present. The majority have the necessary conveniences such as water lines, central heating, illuminating gas, electricity, and sewer systems. The miners of the Estonslanets Trust have built 135 private homes and will build 200 more.

Hospitals have been built in Kokhtla-Yarve, Yykhvi, Kiviyli, and Akhtme, and ambulances and medical aid centers are located at all mines. Almost 500 physicians and at least 1,000 auxiliary medical and servicing personnel serve the miners of the shale basin.

A total of nine kindergartens for 670 children, seven nurseries for 304 children, and six general education schools and evening schools for young workers have been constructed at mines of the trust.

There are more than 110 shops in the city of Kokhtla-Yarve at present.

* * *